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Thesis

APPRECIATION OF BOOKKEEPING FOR JUNIOR HIGH SCHOOL PUPILS

Submitted by

Hugh McNulty

(B.B.A., Boston University, 1929)

In partial fulfillment of requirements
for the degree of Master of Education

1930

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Introduction.

While it is popularly believed that an Appreciation Unit should concern itself with such subjects as History, Music, Art, and Literature, the ingenious teacher will have little difficulty in presenting such a unit in whatever subject she may be teaching. Bookkeeping is no exception, and this thesis presents an Appreciation Unit in a phase of Bookkeeping to the students in the Junior High School.

This is done by presenting the procedure from the reading of an electric meter to the payment of the electric bill.

A comparative study was made of a manufacturing company, the Salada Tea Company, and a public service company, the Edison Electric Illuminating Company.

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The Junior High School Pupil.

The Junior High School is primarily concerned with the adolescent. The main purpose of education during adolescence, "should seek to feed the interests and capacities peculiar to the adolescent age; it should aim to fill and develop mind, heart, will, and body rather than to attempt to distill a budget of prepared knowledge ---". During this period of school life attention should be centered on the emotional natures of the children because then most lasting benefits may be derived. A very strong characteristic of the child from twelve to fifteen years of age is idealism. An intense admiration is felt for heroes and anything which savors of the heroic is turned to with much enthusiasm. They have a strong desire to adhere to the rules of the game as established by the group which they recognize as having the authority to determine what is considered to be good form.

With the coming of adolescence the vocational interests become of vital importance. The students become interested in life careers and have ambition to train themselves for positions and stations in life which are of importance and are recognized amongst the social group

to which they belong. The boy or girl who is capable and fortunate enough to obtain employment which requires skill is looked up to by the other members of the group. Many boys and girls are so placed that withdrawal from school becomes a necessity at an early age. Thus more emphasis should be placed upon junior vocational specialization than is given at present. The boy should be helped toward earning a living and the girl toward learning about the proper conduct of a home. This training whether it concerns the industrial arts, commercial arts, domestic arts, or agriculture, should be introduced in the junior high school in such a manner as to appeal to the interests of the pupils and provide them with a really comprehensive outlook on the fields which are represented.

The appeal to the interests of the adolescent is fundamental and needs to be considered not only in the materials of education but also in the methods of instruction. It is true that, at this age, they are very fickle in their likes and dislikes; nevertheless, they are naturally curious about new things and are eager to explore them. In this transition stage the interest of the children should be built up by allowing them opportunities to

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them. In this transition stage the interest of the child-
ren should be built up by allowing them opportunities to

become acquainted with special fields of knowledge.

The most highly recommended approach to these new fields of thought is by way of general introductory courses. The mind of the adolescence is such that it needs to see large surfaces first and therefore unfamiliar subject matter should be general in nature. This does not mean that accuracy and thoroughness is not necessary but it is of greater importance that the pupils should see the subjects in their whole relationship. The large and fundamental aspects of a subject should be studied, touched upon lightly and passed over with no attempt at completeness of presentation.

In the presenting of unfamiliar subjects the use of many concrete illustrations is important in order to explain the facts and principles involved. Furthermore, the interrelating of the interesting experiences of pupils together with class discussion and textbooks is particularly effective in the junior high school.

That the commercial studies deserve a place in the junior high school will scarcely be questioned. These subjects contain educational value which contribute not only to the end of general culture, but also furnish the

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only to the end of general culture, but also training and

basis for pre-vocational experiences that the pupil may have a better understanding of the ways in which modern business is conducted.

"In other cases the junior high school is an effort to satisfy the demand for industrial training and thus to meet the desires of pupils and society as these have been expressed in recent years. ---subjects which used to belong to the high school can be taught at a point earlier than was formerly the case." (Judd)

"The intermediate school shall accomplish at least five things:

1. To continue common education.
2. To find out and satisfy the needs of the pupils.
3. To explore the interests, aptitudes, and capacities of the pupils.
4. To reveal to the pupils possibilities in the major fields of learning.
5. To start each pupil on a career which will be of most profit to him and to the State." (Briggs)

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1. To continue common education.
2. To find out and satisfy the needs of the
pupils.
3. To explore the interests, aptitudes, and
capabilities of the pupils.
4. To reveal to the pupils possibilities in
the field of learning.
5. To plant seeds which as a result will all
be of most profit to him and to the State." (Hobson)
The main purpose of vocational training is to
prepare the Junior high school for the real world.

reasons and to prepare for the large amount of elimination during this period. Those who leave school usually enter business occupations where clerical practice or junior business training is essential. Such training should include instruction in Business Arithmetic, Penmanship, Bookkeeping, Shorthand, and Typewriting.

It is advocated that "try-out" commercial instruction of a more general nature shall be given in the seventh and eighth school years so that the pupils obtain some knowledge of business which will be of value regardless of what occupation they may enter into. Furthermore, if this training or instruction does not appeal to them they may easily change their programs.

In the ninth year the training altho still general shall be nevertheless, a more practical application which will serve as a foundation for later commercial instruction. Fundamentals, such as, courtesy, honesty, neatness, accuracy, punctuality, cheerfulness, loyalty, industry, attentiveness, and persistency are gradually being acquired and their supreme importance is being realized.

The backbone of the commercial curriculum is bookkeeping since it affords an all around knowledge of commerce and is closely correlated with the other courses.

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bookkeeping, shorthand, and typewriting.

It is suggested that "day-out" commercial in-
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will serve as a foundation for later commercial instruction.
Fundamentals, such as, arithmetic, geometry, algebra, statistics,
bookkeeping, shorthand, typewriting, industry, efficiency,
and general training are gradually being acquired and when such
general instruction is being realized.

The methods of the commercial curriculum is
bookkeeping shall be efforts to all around knowledge of
commerce and is directly connected with the other subjects.

The ability to write legibly and rapidly as learnt in the Penmanship course is put to practice in bookkeeping. The increased accuracy, habits of checking, and fundamental operation of arithmetic as acquired in the Business Arithmetic course is essential in working out the incidental problems of bookkeeping.

The psychology involved in learning bookkeeping is described by the Commission on Reorganization of Secondary Education as follows.

"It furnishes the best means of teaching business--why and how it is carried on, and its classification into retail, wholesale, manufacturing, etc. It affords also a valuable means of emphasizing the all-important trait of character known as initiative. Through bookkeeping the student can be taught the absolute necessity of attention to minor but vital details; he can be made to feel what it means to assume responsibility, to execute order, and to work consistently and patiently for the final results. The habit of sustained effort on one task is no mean asset to any worker and to the young business employee it is of vital importance. The bookkeeping lessons are more closely connected than are those in any other subject in the whole curriculum,

and this continued and connected work means much in the students' development. Business customs and terminology can be taught best through the medium of this subject.

Perhaps, the greatest emphasis in the study of bookkeeping in the junior high school should be placed not on the making of future bookkeepers but upon developing character, initiative, thinking power, good business habits, and the great field open to one who has a knowledge of the science of accounts and how modern business is transacted.

Let us proceed logically by first considering the early history of bookkeeping and how it developed through out Europe.

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History of Bookkeeping.

"They who wish to obtain knowledge of any science must first learn its history."

Historical research has convinced this civilization that in Ancient Babylon, Greece, and Rome there was a high state of civilization both industrial and social. One is convinced that the ancient writers on political economy and commerce had often consulted the scribes and accountants who recorded the business transactions of these days. Bookkeeping, however, as we have come to know it was unknown then. Bookkeeping rightly regarded is a specialized form of the art of keeping accounts. It has been built up as a result of the continued efforts to meet the necessities of trade as they gradually developed.

The method employed in those days of keeping record of transactions was a very primitive form of bookkeeping. In fact it was then called account-keeping.

The earliest written record was a book kept by a Florentine banker in 1211. This account book was in reality merely a number of memoranda entries. Only the transactions of the bank which concerned the clients were recorded and there was very little relation between these accounts. Thus the books were filled with unconnected jottings about the business which they considered important enough to write down.

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Then followed the so-called ledgers which were even inferior to the account books of the Florentine banker. Entries relating to sales and purchases are mixed up with household expenses and often family history was included. The nature of the bookkeeping may be gathered from the fact that the entries are all made by the owner himself without the assistance of the clerks. The ledgers were really notebooks.

The gradual change from utter confusion to some semblance of order came about when the accounts had to be submitted to either customers or partners. Thus we find the banks developed the most improved methods of accounting because they had to show how they stood with each client. Then partners in business wished a record of the entire course of trading so they might divide the profits of the business and this was a motive for better systems in keeping the books. Furthermore, the tremendous growth in volume of transactions in those enterprises situated in the centers of trade made it necessary for a more orderly method of recording dealings.

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merce had reached its highest stage. Venice during the twelfth, thirteenth, fourteenth, and fifteenth centuries was a powerful republic and practically speaking all the world's commerce was concentrated in this small territory and the system of bookkeeping used there was the most perfect known in the world at that time.

In 1494 at Venice, the first treatise on the subject was given to the world. It must have been among the very first books printed because printing from loose metal type set up in the way we know today was not a success until A.D. 1462. The instruction on bookkeeping was only a part of the main volume which was devoted to arithmetic, geometry, and proportion.

The author Brother Lucas Pacioli was born about 1445 in the little City of the Holy Sepulchre in the northern part of Italy near Venice. He was a celebrated mathematician, lecturer, and scholar in his day. He had become familiar with the problems of commerce while acting as a tutor to the sons of one of the merchant princes of Venice. Pacioli had a thorough understanding of the subject and wished to present to the commercial world a systematic treatise of the most important part of commerce, namely, the recording of its transactions and results. Pacioli does not

claim to have invented double-entry bookkeeping but he calls the bookkeeping he described "The Method of Venice".

The object of bookkeeping is stated by Pacioli in precise terms; to give the trader without delay information as to assets and liabilities. He then gives directions for opening a new set of books. The first step, he explains, is to make a complete inventory of one's possession and of one's liabilities or what one is liable for. Having completed the inventory, the merchant is advised to keep three books which are, Memorial, Journal, and Ledger.

The Memorial is best described as a general book of primary entry. In it everything is entered as it occurs; sales, purchases, and other transactions. The duty of the bookkeeper was to convert each item in the Memorial to the monetary unit in which his accounts were kept. Each city had their own system of coinage in those days. Then having made this calculation he transcribed the entry into the Journal arranging it at the same time as a debit or credit. Each entry has two elements in it a debit and a credit which are always equal. This supports the belief that double-entry bookkeeping originated from the algebraic equation used with such skill by the Greek Mathematician and applied to the

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The Memorial is best described as a ledger book of primary entry. In it everything is entered as it occurs; sales, purchases, and other transactions. The duty of the bookkeeper was to convert each item in the Memorial to the monetary unit in which his accounts were kept. Each day and each one's system of exchange in those days. Then having made this calculation he transcribed the entry into the Journal according to the same time as a debit or credit. Each entry has two elements in it a debit and a credit which are always equal. This was the belief that double-entry bookkeeping originated from the algebraic equation used with such skill by the Greek Mathematicians and applied to the

recording of business transactions. Such is the historical origin of the Journal as a book of entry.

The Ledger is treated with equal excellence by Pacioli. The ledger was an immense volume filled with pages of accounts. The individual accounts showed the effect of the transaction transferred from the Journal and the same principle of debit and credit was in effect. The accounts with the customers to whom they sold pepper, iron, kettles, and brass candlesticks and the accounts with the creditors from whom they purchased such wares were all arranged in alphabetical order and the balance transferred to Profit and Loss Account when each enterprise came to an end. Then if this account showed a credit balance it would indicate a profit while a balance on the other side indicates a loss to the proprietor. The balance on the Profit and Loss Account is then carried to the Capital Account.

Definition of Terms.

In the translation of the old treatise on bookkeeping the terms debit, credit, inventory, journal, cash, and capital, assets and liabilities are defined so that the above description may be understood more clearly.

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Definition of Terms.

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that the above description may be understood more clearly.

Debit

Our word debit (shall give) comes from the old Latin "Debita" which in business and from the standpoint of the proprietor means "owe", or he "owes to the proprietor" the which was loaned or given him by the proprietor. This is always on the left hand side when placed in the account in the ledger and is always placed a little to the left in the journal entry.

Credit

Our word comes from the old Latin "credo" (shall have) which means "Trust or believe" as in business our creditors were "believers" in the integrity of the proprietor and therefore loaned or gave him something. Therefore from the proprietor's point of view the word should be translated as the creditor "is owed by the proprietor" that which was loaned or given to the proprietor. This is always on the right hand side when placed in the account in the ledger and is placed a little to the left in the journal entry.

Inventory

Comes from the old Latin "invenio" which means to find out or discover. Thus the bookkeeper found out what possessions were owned by the proprietor.

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Credit

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Inventory

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Ledger

Comes from the Dutch "Legger" meaning "to lie down" and was originated probably from the necessity that the ledger, which was called the big book, became so large and cumbersome that it remained or was lying, always in one place. It had numerous pages full of accounts with customers and creditors for goods bought or sold.

Cash

In Italian, "cassa" comes from case or box. The coins and valuables were carried or placed in a metal box.

Capital

Comes from the old Latin "capitillis" which means "chief" or "head" and also from the Latin "capitili" which means property. Thus capital would mean "the property of the chief" i.e. Proprietorship.

Balance

The following will indicate its meaning. A clean distinction is made by the old writers between;

1. The difference in an account between the debit (left) amount and the credit (right) amounts.

2. The reason for entering this difference in the account, and

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1. The difference in an account between the debit (left) amount and the credit (right) amounts.
2. The reason for settling this difference in the account, and

3. The status of the account after equalizing both sides by the making of an entry and closing the account. All three are termed balances and balancing while two are distinctly opposite.

This is a brief summary of the oldest published work on bookkeeping which was the Italian method called double-entry bookkeeping by the use of the Daybook, Journal, and Ledger. This prized book has influenced us to such an extent that the principles which it enunciates as of use those days, remain the foundation of our present methods of bookkeeping. There was hardly another science about which there was so much doubt and darkness as bookkeeping and this work by Pacioli was a tremendous step forward. It served as a standard throughout the various countries of Europe during the next century.

Peculiar Sayings of Pacioli.

"Where there is no order there is confusion."

"Who does nothing makes no mistakes, who makes no mistakes learns nothing."

"Accounts are nothing else then the expression in writing of the arrangement of his affairs which the merchant keeps in his mind."

"If you are in business and do not know all about it, your money will go like flies, that is, you will lose it."

3. The status of the account after equalizing
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"If you are in business and do not know all about it, your
money will go like flies, that is, you will lose it."

"If losses are in excess of the gains--from which state of affairs may God keep every one who really lives as a good Christian."

The scene of commerce had now shifted from Venice to the republics of Holland. The Dutch had obtained supremacy over the seas and in their commercial relations with the Italians they became educated in the most advanced form of bookkeeping then prevailing.

The most outstanding Dutch writer on the subject of bookkeeping at the commencement of the seventeenth century was Simon Stevin, a man of great learning especially in the field of mathematics and engineering. He had worked in a mercantile office in Antwerp when quite young and became familiar with the problem of keeping records of business transactions. While engaged in Public Service he thought bookkeeping important enough to induce Prince Mouritz of Orange, the governor of the Dutch countries to install double-entry bookkeeping throughout his territory. Stevin wrote part of his book in the form of a dialogue, consisting of questions and answers which actually occurred in the arguments he had while teaching Prince Mauritz the art of bookkeeping. The examples of the journal and ledger are in many ways excellent. The journal entries are systematically grouped and wherever

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The case of commerce had now shifted from Venice to the republic of Holland. The Dutch had obtained supremacy over the sea and in their commercial relations with the Indians they became interested in the most advanced form of bookkeeping then prevailing. The most outstanding Dutch writer on the subject of bookkeeping at the commencement of the seventeenth century was Simon Stevin, a man of great learning especially in the field of mathematics and engineering. He had worked in a mercantile office in London when he came to Holland and became familiar with the method of keeping records of business transactions. While engaged in public service he thought bookkeeping important enough to induce Prince Maurice of Orange, the Governor of the Dutch Republic to install double-entry bookkeeping throughout the territory. Stevin wrote part of his book in the form of a dialogue, consisting of questions and answers which actually occurred in the arguments he had while carrying out his duties in the office of bookkeeping. The examples of the journal and ledger are in many ways excellent. The journal entries are systematically arranged and wherever

practicable only the totals are drawn in the ledger. Other interesting features are the journalizing of petty expenses and private outlays in monthly totals. In the ledger the profit and loss account is written up at the end of the year and not at the close of each piece of business as in old writers.

This book by Stevin showed many advances towards modern practise and it was of great importance to America because it influenced the views of his friend Richard Dafforne who through his book, "The Merchants Mirror" published in 1636 became practically the English guide and pioneer writer of texts on bookkeeping.

Richard Dafforne an English arithmetic master lived for many years in Amsterdam and he wished to familiarize his country men with methods of bookkeeping practised in Holland. He became acquainted with Simon Stevin and follows the same dialogue style as Stevin in his book. He used the old-fashioned book trio of Memorial, Journal, and Ledger. It became the model and guide of the later English writers.

Thus we find that as the centers for commerce shifted from one country to another so also did the most improved methods of bookkeeping. Our present accounting literature and knowledge of bookkeeping came to us indirectly from Pacioli, through the Dutch, and later through

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Thus we find that as the centers for commerce shifted from one country to another so also did the most improved methods of bookkeeping. Our present accounting literature and knowledge of bookkeeping came to us indirectly from Pacioli, through the Dutch, and later through

the English. It is strikingly noticeable even today that experience has established a fundamental principle in the development of bookkeeping.

Lucas Pacioli enunciated the principle which has stood the test of time and use and will regulate bookkeeping for all ages. "For every debit there must be a credit" will be our axiom, let us otherwise keep our ledger according to whatever arrangement may suit our requirements.

In direct contrast to the deliberate and careful writing up of the old journals and ledgers of these ancient days we turn to the marvels performed by the time saving device known as the Bookkeeping Machine.

The machine. It is especially noticeable even today that
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These points are emphasized in the following which may
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The Era of the Accounting and Bookkeeping Machine.

The most modern methods of accounting and bookkeeping resulted in the inventions of machines to do away with the use of pen and ink for recording business transactions just as the perfection of the typewriter has abolished the quill for correspondence purposes.

The present generation will doubtless witness the time when the use of the pen and pencil in business will be confined almost entirely to the writing of signatures and checking of records.

The suitability and application of the bookkeeping machine when a purchase is made will first be considered. A study of the purchasing of Merchandise involves the keeping of an accurate record of incoming merchandise, noting the terms of payment so that discount earnings may be taken advantage of, and the issuing of checks, and also the handling of the Vendor's Accounts. The accounting machine is so designed and constructed that it enables the writing of a Remittance Advice, with any desired number of copies on a Vendor's Ledger and Record of Invoices received in a single operation. It is also possible to write the Vendor's Check, charge the Ledger Account and enter the complete transaction including the amount of discount earned on a Check Register in a single operation.

Then the writing of the Order is to be considered before we will take up the writing of the Bill. The flat-

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writing surface construction of the bookkeeping machines makes it possible to print any number of forms. These usually consist of the Acknowledgement of the Order, combined with the writing of the Order itself, gives to the customer an exact duplicate of the Order as understood and accepted on the books of the Company. Thus the confusion attending mistakes occurring in Orders, with the needless additional expense and possible loss of Good Will on the part of the buyer, is removed.

The Billing of the Goods involves the writing of two invoices, the original Invoice to go with the Merchandise to be filed, and the Delivery Ticket. The invoices are filled out and the total is extended into its proper column. Also the total Billing for any desired period is secured automatically as the totals are written on the individual Invoices.

The application of the machine in the recording of the Sales and the corresponding entry in the Vendee's accounts is next to be considered. This mechanical marvel can be adapted to show:

1. A Monthly Statement for each customer, describing all transactions in detail.
2. A ^Ledger Account for each customer.
3. A Daily Sales Journal that analyzes sales into five major commodity classifications.

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4. A daily Record of Cash Receipts that shows the total amount credited to each customer's account and a five column Cash Analysis, i.e., Net Cash, Cash Discounts, Allowances, Freight and Other Deductions.

Another feature of the machine is when posting sales, each entry is made to three different records in one operation, namely, the Monthly Statement, the Ledger Account and the daily Sales Journal. When posting cash credits, the daily Record of Cash Receipts take the place of the Sales Journal, otherwise the combination is the same.

The boast of this accounting and Bookkeeping Machine is that it is able to write and calculate all the Office records from Order writing to the writing of an Income Tax. Here are the numerous operations it is able to perform with great flexibility to adapt itself to the necessities of the individual enterprise.

1. Adding Columns of Figures and Subtracting.
2. Writing Orders.
3. Writing Bills.
4. Posting and Balancing Customers' Accounts and Preparing Monthly Statements.
5. Preparing Records of Sales, Returned Sales and Cash Receipts.
6. Writing Checks and Vouchers.
7. Posting and Balancing Purchase Accounts.

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5. Preparing Records of Sales, Returns and Refunds and Cash Receipts.
6. Writing Checks and Vouchers.
7. Posting and Balancing Various Accounts.

Appreciation

8. Preparing Records of Purchases, Returned Purchases and Cash Payments.
 9. Posting and Balancing Expense Accounts.
 10. Preparing Expense Records.
 11. Posting and Balancing General Ledger Accounts;--Asset, Liability and Revenue Accounts.
 12. Preparing General Ledger Journals.
 13. Preparing Profit and Loss Statements.
 14. Preparing Statements of Assets and Liabilities.
 15. Preparing Income Tax Returns.
 16. Writing all Records in any Business, i.e., Envelopes, Cards, Large or Small Forms, in original or any number of copies.
- The real value lies in the fact that after the idea has gotten home to us we are overjoyed that we are able to perceive it, we are pleased to find such a thing has been created by man, and we wish that we were able to create something outstanding or take part in such creations.

The appreciation lesson is distinctive from the usual routine types of lesson. It is of an epoch-making nature, the teacher has great enthusiasm in preparing it and wants it to be visible in their every day life, the pupils feeling a sense of awe and being presented

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Appreciation

The use of appreciation in presenting and creating enthusiasm for new material or enliven old material is particularly applicable to the junior high school. The pupils are at an age when contemplation is possible and the necessity for following a sole plan of study is not yet reached. They are able to enjoy and receive true inspiration from appreciation lessons.

Appreciation is a mental act which deserves as much distinction and consideration as the other activities of the mind. It differs from reasoning because we do not appreciate by thinking through a given problem to a logical conclusion but rather we look at a work of art, or hear the speech, song, or poem of a master and we are instantly or gradually aware that it is a masterpiece. The real value lies in the fact that after the idea has gotten home to us we are overjoyed that we are able to perceive it, we are pleased to find such a thing has been created by man, and we wish that we were able to create something outstanding or take part in such creations.

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with interesting materials are then able to secure real enjoyment. Two important advantages of the appreciation lesson are:

1. The larger part of the class participates as listeners and constitute the audience. The experience they are gaining while so engaged must grip them for its own sake. In all cases this experience is based on the motive of entertainment and therefore must give pleasure.

2. It is one of the most important educational means of influencing and transforming the attitudes, ideals, and standards of children.

There are some very important principles which have to be considered in preparing and presenting these lessons. It is necessary that due thought be given to the first impression which the pupils are to receive from an inspiring speech, poem, or song, because this impression has the strongest and most lasting effect. The first impression should be forceful and not weak if appreciation is to be expected. Then preliminary interest in the lesson should be built up amongst the pupils by the teacher. The arousal of anticipation for an unusual happening which is to occur in the classroom at a future date. The day in which the lesson is actually given great care should be exerted to prevent distraction by outside influences.

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The pupils must be at ease and in a receptive mood if they are to receive the full benefits of the subjects presented for appreciation. There are many forms of distraction, the most common of which are the placing of undue importance on the difficult words and phrases of a poem or speech, and the necessity of going through certain processes in order to be prepared to appreciate a work of art. This is known as the distraction of technique.

It is generally admitted that there is considerable material for appreciation in every subject especially those subjects which deal with human life. Thus geography, history, literature, or bookkeeping may be cultivated to furnish the basis of lofty motives, persistent effort, and hardships overcome. Therefore in the handling of the subject matter of these studies the technique of appreciation must be understood. It is necessary that four definite steps are recognized to guide the teacher in presentation.

1. Creating an atmosphere of interest.

- a. The teacher may show her own appreciation greatly, sensibly, and sincerely.

- b. The teacher may admit her deficiency, regretting that she cannot go further and advise those who do appreciate far beyond her ability to do so.

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they are to receive the full benefits of the subjects
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be recognized as guiding the teacher in presentation.
1. Treating an atomism of interest.

2. The teacher may know how to appreciate

greatly, honestly, and sincerely.

3. The teacher may know how to appreciate

greatly that she cannot go further and advise those who
do appreciate far beyond her ability to do so.

c. The teacher should lead the child to grow in appreciation at his own rate. It is an affair of feeling and cannot be forced.

2. Providing proper exposure to appreciation material.

a. The teacher may read to the children material which is within their comprehension and which should make an appeal.

b. The teacher may take the pupils on trips either real or imaginary or bring in an outsider.

3. Giving appropriate fundamental knowledge.

a. Mastery of the technique of a subject should not be urged too strenuously because it results in effects directly opposite from what intended.

b. Properly handled a small amount of analysis material will increase the enjoyment.

4. Providing for expression and growth.

If the child has become interested, if he has been exposed to appreciation material and if he has been taught according to his ability to comprehend some of the simple fundamental knowledge on which to base appreciation then he is prepared for the fourth step and that is a reasonable expression of himself either with reference to the appreciation material or in the appreciation material.

3. The teacher should find the child to
grow in expression at his own rate. It is an effort
of feeling and cannot be forced.
2. Providing room, exposure to expression
material.
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If the child has become interested, it has been
been exposed to appreciation material and it has been
taught according to his ability to comprehend more of the
same fundamental knowledge on which to base expression
that he is prepared for the fourth step and that is a
reasonable extension of interest either with reference to
the appreciation material or in the appreciation material.

Some of the ways he can do this are:

- a. Choosing.
- b. Repeating.
- c. Attempting to execute or create.
- d. Working in a group or club. *

* Taken from the Third Report on Evaluation of
Instruction. N.E.A., G. M. Wilson

Some of the ways he can do this are:

- a. Choosing.
- b. Suggesting.
- c. Attempting to excite or create.
- d. Working in a group or club.

* Taken from the Third Report on Evaluation of

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A Manufacturing Company
(The Salade Ice Company of Boston)

Purchasing and Stores Control

Elementary in any business is the purchase.
Consider the way a certain type of business devoted to
the mixing, packing, and merchandising of a single food
product conducts its purchases.

PART TWO

A Manufacturing Company in three ways.

A Public Service Company great bulk of the sup-
ply is sold at auction.

b. Through the medium of local brokers and

c. Through foreign representatives in con-
tact with the source.

Every purchase when made is paid for by check
or by letter of credit against the shipper's bill of lad-
ing. As a consequence little concern will be maintained
for raw materials except that they are controlled through
the medium of perpetual inventory system which will be
discussed later.

Packing supplies, sundries, advertising material
and stationary constitute a large item of expense and it is
through these that the systems used in purchasing, receiving,
and control will be discussed.

Force of business makes itself felt on certain
kind of material which results in a need for replenish-
ment and marks the beginning of a purchase. In this busi-
ness, as in most others no one is allowed the authority to

PART TWO

A Manufacturing Company
A Public Service Company

A Manufacturing Company
(The Salada Tea Company of Boston)

Purchase and Stores Control

Elementary in any business is the purchase. Consider the way a certain type of business devoted to the mixing, packing, and merchandising of a single food product conducts its purchases.

Raw materials purchased in three ways.

- a. At a market where a great bulk of the supply is sold at auction.
- b. Through the medium of local brokers and
- c. Through foreign representatives in contact with the source.

Every purchase when made is paid for by check or by letter of credit against the shippers bill of lading. As a consequence little concern will be maintained for raw materials except that they are controlled through the medium of perpetual inventory system which will be discussed later.

Packing supplies, sundries, advertising material and stationery constitute a large item of expense and it is through these that the systems used in purchasing, receiving, and control will be discussed.

Forces of business makes itself felt on certain kinds of material which results in a need for replenishment and marks the beginning of a purchase. In this business, as in most others no one is allowed the authority to

A Manufacturing Company
(The United Tea Company of London)

Processes and Systems of Control

Elementary in any business is the process.

Consider the way a certain type of business devoted to
the mixing, packing, and merchandising of a single food
product conducts its processes.

Raw materials purchased in three ways.

a. At a market where a great bulk of the prod-

uct is sold at auction.

b. Through the medium of local brokers and

c. Through foreign representatives in con-

tact with the source.

Every purchase when made is paid for by check

or by letter of credit against the balance bill of ind-

ent. As a consequence little concern will be manifested

for raw materials except that they are controlled through

the medium of perpetual inventory system which will be

discussed later.

Feeding supplies, materials, advertising material

and stationary constitute a large item of expense and it is

through these that the systems used in purchasing, receiving,

and control will be discussed.

Forms of business which itself take on certain

kind of material which results in a need for material-

ment and make the beginning of a purchase. In this pur-

pose, as in most others no one is allowed the authority to

create a purchase unless they are duly responsible for such. Having authority, the General Manager, Superintendent or the Storekeeper; for it is with them alone that the Purchasing Agent can act, as they are responsible for the specification necessary for purchases and are familiar with them.

The Purchasing Agent receives the following order:

<i>REQUEST for PURCHASES</i>		
<i>Requisition No.</i>	<i>Deliver to</i>	<i>Date</i>
<i>QUANTITY</i>	<i>DESCRIPTION</i>	
<i>ORDER FROM</i>		<i>Purchase Order No</i>
<i>FOR</i>	<i>ACCOUNT No.</i>	<i>WANTED by</i>
<i>REQUIRED BY</i>		<i>Approved</i>

Within the Purchasing Department there are records and useful information on all merchandise used by the concern. This information is in regard to the concerns stocking such merchandise, their prices, quantity, and quality, discounts and terms offered. Action for purchase is made on the basis of information given for the best interest of the concern.

create a purchase order they are fully responsible for
 such. Having authority, the General Manager, Superin-
 tendent or the Stenographer; for it is with them alone
 that the Purchasing Agent can act, as they are responsi-
 ble for the specification necessary for purchase and
 are familiar with them.

The Purchasing Agent receives the following

order:

Purchasing Agent	
To the General Manager, Superintendent or Stenographer	
For the purchase of the following material:	
<div data-bbox="175 1088 1223 1350"></div>	
<div data-bbox="175 1350 1223 1485"></div>	

Within the Purchasing Department there are
 records and useful information on all responsibilities used
 by the concern. This information is in regard to the
 concerns stocking such materials, their prices, quan-
 tity, and quality, discounts and terms offered. Action
 for purchase is made on the basis of information given

In order to secure merchandise for the person requisitioning it, the purchase agents duty is to fill out the following purchase order:

<i>A.B.C. COMPANY</i> <i>BOSTON, MASSACHUSETTS</i>				
<i>To</i>			<i>No</i> <i>DATE</i>	
<i>Please enter our order for the following</i>				
QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL	
<i>All Freight must be prepaid</i> <i>Delivery DATE</i> <i>TERMS</i>				
<i>C's SIGNATURE</i>		<i>PURCHASE AGENT</i> <i>BUSINESS MANAGER</i>		

which is made out in triplicate. The original (white) is sent to the Vendor, the duplicate (yellow) is retained by the purchase agent and the triplicate (pink) is sent to the Stores Department. The Vendor's copy is the contract for purchase and is upheld as such. The purchasing agent's copy is placed in a dated tickler file which will cause it to be brought to his attention automatically, thereby, causing him to find out if such goods have arrived when needed.

In order to secure responsibility for the goods

responsible for, the goods agent is to fill

out the following purchase order:

To: _____			
From: _____			
Description of Goods: _____			
Quantity: _____			
Unit Price: _____			
Total Price: _____			
Remarks: _____			

which is made out in triplicate. The original (white) is sent to the Vendor, the duplicate (yellow) is retained by the purchase agent and the triplicate (pink) is sent to the Stores Department. The Vendor's copy is the correct for purchase and is withheld as such. The purchasing agent's copy is placed in a dated folder file which will cause it to be brought to his attention automatically, thereby, enabling him to find out if such goods have arrived when needed.

Shipments of merchandise ordered from vendors are received by a receiving clerk who acknowledges receipt. A receiving slip is made out in triplicate and is attached to the merchandise and sent to the Stores Department. One copy of the receiving slip is retained by the receiving clerk while the third is sent to the purchasing agent. Upon receipt of the receiving slip the purchasing agent removes his purchase order from the tickler file, checks off the order as having arrived, and, waits for notification from the Stores Department as to the amount, quality, and condition of the merchandise that was sent there by the receiving clerk with attached receiving slip.

STOCK DEPARTMENT			
Received from		Rec. Slip No.	
NAME		DATE	
Address			
INV. CHECK	ORDERED	Wgt.	VIA
QUANTITY	PKGS.	DESCRIPTION	AMOUNT
Delivered to.			

NAME OF MATERIAL

ON ORDER

Received

ON ORDER

Received

ISSUE II

At the top is seen the "On Order" card while at the bottom will be seen the card for "Daily Consumption".

Manufacturing established working on great production units, and where many products are merchandised it is necessary to carry columns for unit prices, total value, then amount of stock available, and reserved. In this type of business being considered, such information is not essential.

Triplicate copies of the purchase orders, when recovered in the Stores Department, are recorded in the space provided for the same on the "On Order" card and then filed away numerically.

Receiving slips, after approval by the purchasing agent are entered in two places--once, on the "On Order" card in the section provided for merchandise received and again on the "Consumption" card--the amount received being recorded in red ink.

Material needed for use is issued from the Stores Department as needed, but, issue can be made only on the basis of an approved order. Approval is made by responsible heads under whose control the stock is to be used. Release of stock is allowed by the approved order which also allows and permits a deduction from the stock record. Following is the stock order or release:

Manufacturing established working on press

production units, and where many products are manufactured it is necessary to carry columns for unit prices, total value, then amount of stock available, and reserved. In this type of business being considered, such information is not essential.

Tripartite copies of the purchase orders, when recovered in the Stores Department, are recorded in the space provided for the same on the "On Order" card and then filed away separately.

Receiving slips, after approval by the purchasing agent are entered in two places--once, on the "On Order" card in the section provided for merchandise received and again on the "consumption" card--the amount received being recorded in red ink.

Material needed for use is issued from the Stores Department as needed, but, issues can be made only on the basis of an approved order. Approval is made by responsible heads under whose control the stock is to be used. Release of stock is allowed by the approved order which also allows and permits a deduction from the stock record. Following is the stock order or release:

STOCK RELEASE		
No.		DATE
APPROVED BY		
AMOUNT	GOODS	FLOOR

At all times stock records must balance with the amount of stock on hand. Balancing is insured by a check made periodically against bin tags which accompany the merchandise and on which, entry is made similar to the "Consumption" card of the Stores Ledger. A sample bin tag:

STOCK			
DATE	IN	OUT	BAIANCE

In the event that stock is over ordered compelling a return from the department which requisitioned it, the following form is used and is handled much the same as a purchase order upon its arrival in the Stock Department.

Inventory Statement		
For the Month of		
Item	Quantity	Value

At all times stock records must balance with the amount of stock on hand. Balancing is insured by a check made periodically against the data which accompany the merchandise and on which entry is made similar to the "Inventory" card of the Goods Ledger. A sample

is as follows:

Inventory Statement			
For the Month of			
Item	Quantity	Value	Unit

In the event that stock is over ordered causing a return from the department which resulted in it, the following form is used and is handled much the same as a purchase order upon its arrival in the stock Department.

CREDIT MEMO		
FROM FLOOR		No. . . . DATE
QUANTITY	KIND OF MATERIAL	EXPIANATION
STOREKEEPER		FOREMAN

Perpetual inventory systems, or the constant control of stock as has been described are designed primarily to keep the investment in stock at a minimum; to insure a constant supply and to prevent the overloading of stock with its consequence of "tied-up" capital.

Minimum on the Stores Ledger cards is determined by the length of time that is required to replenish a daily stock bin to nothing. Maximum is determined by several factors; capacity for storage, rapidity for using and savings which may result from large purchases and discounts--its purely an arbitrary figure.

At the end of fiscal periods, physical inventories are taken which are valued and brought onto the

Accounting Records. All purchases (as shown in the book of Cash Disbursements) charge to "Stores" are totaled, the result added to the Old Inventory; less the New Inventory renders the amount of Stores material used in operations. Stock issued is then charged to the proper accounts, i.e. a debit to the expense and inventory accounts if needed; and a credit to Purchases or Inventory account as the situation may require.

It has been seen how the control of an asset as valuable money can be taken care of with efficiency , economy and a minimum of loss and theft.

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Inventory

At the end of fiscal periods in business, it is considered good policy to make an actual check-up on all assets, stock, and materials within the concern. These "checkups" or "stock-takings" as they are called serve three purposes:

1. They tend to bring the executives into close contact with all assets owned and owed for.
2. An accurate check is secured against the perpetual inventory systems used.
3. Accurate costs can be computed for income statements if the Inventory is conducted and taken properly.

Fifteen or twenty days before the close of the fiscal period, persons who will be concerned with the inventory work should receive a notice from the Accounting Department in regards to the Inventory. Contained in the notice are facts strictly pertinent to the Inventory such as the date of closing for such Inventory, the need of preparation for it by minimizing the stock ordered for departmental usage, the need of proper arrangement and marking of all stock including that which is salvaged, damaged, or useless and most urgent of all--the necessity of careful, correct, and accurate countings. Crews taking stock, foremen, and office checkers are named therein;

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ing stock, foreman, and office checkers are named therein;

as well as, the methods to be employed in the handling of receipts and shipments. (The date and hour are fixed after which no shipments will be made and no receipts forwarded to the Stores Department until the completion of the Inventory).

Directly responsible for the Inventory and working together are the Purchasing Agent and the Chief Accountant. On the date and at the time specified for the taking of the Inventory, they and the crews taking and checking stock meet. Crews are assigned to the kinds of stock with which they are most familiar and are instructed to take all the stock of that particular kind used in the concern. The crews are then supplied with stock slips which are numbered and are made out in duplicate. One set of slips is made out for each bin or location taken and are left with it after the initials of the takers are inscribed thereon. For each type of stock carried, there should be a distinctly different colored type of stock slip--these colors promote and facilitate the computing of costs, as well as, the summarizing of such stock when made. A stock slip and its contents follows:

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<i>Do not lose, destroy, or mutilate</i>				
<i>Stock Slip (Boxes)</i>				
<i>Counted by. :</i>	<i>OFFICE</i>	<i>FACTORY</i>	<i>DATE</i>	<i>Floor</i>
<i>Checked By</i>			<i>ORDER No</i>	<i>No.</i>
<i>QUANTITY</i>	<i>MERCHANDISE</i>		<i>SUPPLIED BY</i>	

Following the initial crew of two is another crew usually from the office, who go through exactly the same procedure as the first crew except that they do not write up another slip--instead, they serve as an unbiased check on those proceeding them.

Each crew, after having completed the work to which they were assigned, report back to the Purchasing Agent or accountant who assign them further work until the complete inventory is taken. Upon completion of the entire inventory, the Purchasing Agent and Accountant pick up the original stock slips. The duplicate slip is left with the stock until complete pricing and checking against inventory systems have taken place.

Crews taking stock are not released until the "pick-up", operations can be resumed.

In order to insure correct and accurate computations for inventories, summaries are made from the inventory slips by the clerical forces; which are submitted with the slips, to the Purchasing Agent and the

To not slip things or mistakes		Short slip		(over)	
Inventory		Office (over)		100	
Office B1				100	
Inventory		Inventory		Inventory	

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Accountant. The summaries as taken off are carefully checked, pricings made by the purchasing agent and computations by the accounting staff.

Summary sheets in use follow:

SUMMARY of STOCK SLIPS						
MATERIAL			CARD No.			
			DATE			
SLIP	REMARKS	Supplied BY	QUANTITY		UNIT VALUE	TOTAL VALUE
			AMOUNT	UNIT		

Completion of all Summary Sheets permit the valuation of the total inventory. Adjustments are made if necessary, and the controlling Accounts within the General Ledger are corrected by the method discussed in Stores Control.

Two important functions in any business are buying and selling. A great many businesses are engaged in something more than buying and selling, i.e., producing or manufacturing materials for sale.

In consideration is a business that mixes and packs their raw material on a large scale. Within the organization, the place of producing for sale is called a factory.

Factory Methods

Specific Order Basis Considered

Strictly speaking from the Accounting standpoint, it is not a factory as the accounting affiliation required with it and the records required for it are not similar to usual factory methods. Our interest then, although retained for the organization we are visiting, will be extended to cover some of the elements generally used in Factory Accounting Systems, as well as those of our own specific case.

Preparatory to manufacture, there must be the release of material from the Stores Department. Usually, the cost of such material is definitely determinable and can be applied to any specific order which is in the process of manufacture. Labor costs directly applicable to such orders are as a rule definitely known; and in some cases are added to the cost of the specific order in process--such costs as have been mentioned, when combined, are known as "Prime Costs."

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Factory Methods

Specific Order Basis Considered

Factory accounting systems vary according to the type of product being produced or processed. In general, and especially where factories operate on specific orders for distinct customers, a factory accounting system's purpose is to show the accurate costs to manufacture--in order that, the product may be sold at a selling price which will insure profits. Other reasons for their employment are for the purposes of showing when, from where, and how profits occur; and further, the prevention and minimization of operational losses, and as a guide to study for the strengthening of both weak and strong points in direct productivity.

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As for the purposes of comparison with the statement of income, but, if they come very near to it, they are considered as good and as serving the purpose for which they were intended.

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Concerns doing business on a specific order basis, in their factory systems, keep a very careful record of all orders produced and in the course of production. Such records are known as cost systems and are kept for the purposes already mentioned.

Applicable to the factory are certain costs from which certain sections of, or all parts of the factory have benefited. Costs such as these are known as "Burden" or "Factory Overhead". In order to do justice to and have such costs applicable to all production, it is essential in the specific order type of business that such costs be distributed to all orders. "Burden Allocation", or the distribution of such costs, is made on an arbitrary basis which is determined from the amount of proportional benefit that each order has received from the different costs composing the "Factory Overhead". Distribution or the amount of benefit received is approximated from the best kind of information and judgement available.

Cost systems, it is true, cannot and do not work to a point of exactness for the purposes of comparison with the statement of income; but, if they come very near to it, they are considered as good and as serving the purpose for which they were intended.

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work to a point of exactness for the purpose of comparison with the statement of income; but, if they come very near to it, they are considered as good and as serving the purpose for which they were intended.

Factory Methods

General Order Basis Considered

Minimum--as used and explained in the Stores Ledger is the factor which determines the need of processing in the specific type of business being considered. Upon arrival at the minimum in any type of stock used in shipment, there is issued from the department in which the perpetual inventory system is kept, an order made out in triplicate based upon the type and amount of stock needed. The original of this order is sent to a department, or Laboratory Department as it is known, which controls all the raw material through a perpetual inventory system. The duplicate is sent to the department in which the actual packing is done and the triplicate copy is retained in the department of origin. The order form follows:

RAW MATERIALS ORDER			
TYPE OF MIXTURE		DATE	No.
NUMBER	PACK IN	POUNDAGE SIZE	POUNDAGE TOTAL
REMARKS: SHIPPING			Sales

Upon receipt of this order the Laboratory Department composes a written mixture as standardized by the concern. Made out in the Laboratory Department, the following order constitutes authority for processing, as well as, the release of raw materials from stock:

RAW MATERIALS Release			
TYPE OF MIXTURE		DATE No.	
No. OF BOXES	MARKINGS	Respective Weights	Total Weight
COMPLETED		APPROVED	

Copies of the above Materials Release are distributed as follows:

1. To the department in which the primary process takes place.
2. To the department of origin.

To maintain and insure proper and immediate dispatch of all orders for processing, they are stamped on the back with a device which records the time and date of delivery.

Two other processes follow the first. All three of these processes require very little labor as they are accomplished by gravity and machinery..

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RAW MATERIALS RELEASE			
TYPE OF MIXTURE		DATE	
Net Gens	MATERIAL	Respective Weight	Total Weight
Completed		Approved	

Copies of the above Materials Release are dis-

tributed as follows:

1. To the department in which the primary pro-

cess takes place.

2. To the department of origin.

To maintain and insure proper and immediate

dispatch of all orders for processing, they are stamped on the back with a device which records the time and date of delivery.

Two other processes follow the first. All

three of these processes require very little labor as they are accomplished by gravity and machinery.

Recording the operation of the machines are small clocks fitted with a device which operate with the operation of the machine. It is plainly evident that no time can be lost by the machinery or the little labor required in the operation of those machines.

Following the processes mentioned in the preceeding paragraph, is the department for packing. The greatest part of the labor employed in our host's factory is employed in this department. It is one of the few places in the factory where cause for contact arises with the Accounting Department.

Raw Material from its first process until its arrival in the Shipping Department works itself downward from the former to the latter.

Machines in the Packing Department automatically weigh, pack, and label the mixtures as composed in the first process. Packers place the product in boxes and they are removed by a "checker", who records the packing on the following cards according to size and to poundage:

TYPE OF MIXTURE						
DATE				SIZE		
MACHINE NO						
TIME	60's	20's	10's	5's	lbs	Total

According to the operation of the machines are small clocks fitted with a device which operate with the operation of the machine. It is plainly evident that no time can be lost by the machinery or the little labor required in the operation of those machines.

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Machines in the Packing Department automatically weigh, mark, and label the mixtures as composed in the first process. Packers place the product in boxes and they are removed by a "checker", who records the packing on the following cards according to size and to pounds:

TYPE OF MIXTURE						
MARKED AS						
TYPE	NO.	WT.	NO.	WT.	NO.	WT.

Factory Methods

Payrolls and Labor Control Considered

Computations for the perpetual inventory system maintaining control over stock used in shipments are made from the checker's cards, hence the need for rigid accuracy.

Purchases of raw materials and labor determine to a great extent the financial success of any business.

Production and processing in the main depend upon two things, machinery and labor. Machinery, regardless of the kind and amount owned by any establishment, will not operate and produce without human control, labor. Constituting the basis for stringent accounting control is labor.

During the hiring and firing, it has been learned, costs money and to eliminate such expense employment must be made judiciously. Applicants for positions must be interviewed and employed by those executives within the concern who are in direct personal contact with the labor situation. Each prospective employee interviewed is asked to make out the following card:

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Care, caution, and control must be exercised in the financial expenditures of any concern if that business is to accomplish the purpose for which it was intended. Purchases of raw materials and labor determine to a great extent the financial success of any business.

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Employee Card		
Name	Address	Signature

Factory Methods

Payroll and Labor Control Considered

Care, caution, and control must be exercised in the financial expenditures of any concern if that business is to accomplish the purpose for which it was intended. Purchases of raw materials and labor determine to a great extent the financial success of any business. Production and processing in the main depend upon two things, machinery and labor. Machinery, regardless of the kind and amount owned by any establishment, will not operate and produce without human control, labor. Constituting the basis for intelligent accounting control is labor. Hiring and firing, it has been learned, costs money and to eliminate such expense employment must be made judiciously. Applicants for positions must be interviewed and employed by those executives within the concern who are in close personal contact with the labor situation. Each prospective employee interviewed is asked to make out the following card:

APPLICATION FOR POSITION			
NAME		DATE	
Address			
AGE	SINGLE OR MARRIED	DEPENDENTS	EDUCATION
LAST EMPLOYED			
CAUSE OF RELEASE			
PERIOD OF EMPLOYMENT			
NATIONALITY		UNION or NON-UNION	
REFERENCES			

Applicants hired are assigned a clock number and are placed according to their ability, knowledge, and training. Wages are determined to a great extent by the basis used for employment, plus consideration for personal needs in the way of dependents.

Notification of employment by the person directly responsible for hiring must go forward immediately to the Accounting Department. The following form records the facts needed in the Accounting or Payroll Department:

No.	DATE	
DEPT of ORIGIN		
PLEASE PLACE THE FOLLOWING ON OUR PAYROLL		
CLOCK No.	NAME	AMOUNT of WAGES

New, as well as old employees, are obliged to record their time in or out every morning, noon, and night. Each employee is provided with a clock number and upon arrival or departure goes to an automatic time recording device, which records the time of each impression made on a sheet or card as the case may be. Weekly payrolls are made up from the recordings on the sheets or cards--a sample sheet follows:

<i>No.</i>	<i>NAME</i>	<i>FRI.</i>	<i>SAT</i>	<i>MON</i>	<i>TUES</i>	<i>Wed.</i>	<i>THURS</i>	<i>No of DAYS</i>	<i>TIME</i>	

Absentees and tardinesses are checked up one hour after operations are begun in the morning and afternoon--these are recorded as follows:

<i>No.</i>	<i>NAME</i>	<i>ABSENT</i>		<i>LATE</i>		<i>REASON</i>
		<i>A.M.</i>	<i>P.M.</i>	<i>A.M.</i>	<i>P.M.</i>	

Payrolls and employees are made up and paid off on the day following the last day of the pay-week. Time sheets are removed and replaced with new ones. Against each persons name is recorded the number of days worked by all employees, immediately after completion of the time sheets, they are forwarded to the Accounting Department for computation and entry on the following payroll sheets made out for each individual employed:

WAGE Sheet			
NAME	CLOCK No.		
<i>This certifies that I have received wages as follows</i>			
FROM	TO	AMOUNT	SIGNATURE

For the total payroll, a check is made out and cashed at the bank which places the proper amount of money in each envelope. Pay envelopes are returned to the company and the employees are paid off during working hours by the Accountant and Payroll Clerk.

Employees released voluntarily or otherwise are paid off in cash from a fund called "Petty Cash", which fund has its control in the office. Notice of such release is forwarded to the Accounting Department on the form which records the notice of employment with

the words "Released" written across its face.

Our host's factory, since it is not one of those producing for specific orders, has no need of an accounting system as has been discussed for that particular type of production. Items of expense directly applicable to factory operation are charged to their respective accounts, either from subsidiary records or other books of original entry during, or, at the end of the fiscal periods. Summarized in prescribed and statement form are those expenditures-- which summarization and statement forms the basis for further entries and deductions for other analysis and statements of income.

Advertising

Methods of expenditure control in this particular branch of business very greatly according to the needs of the type of business being conducted.

Mediums of advertising are newspapers, magazines, trade journals, bill posters, window displays, street cars, motion pictures and other devices which will focus attention and demand reading. In the type of business under consideration, newspapers and window displays alone are used.

Newspaper advertisements are taken on the contract basis and as a result are paid when contracted for.

Window Displays are placed by representatives of the concern, who, after placing the same must fill out and have the following form signed:

ABC. COMPANY	
BOSTON, MASS	
This certifies that a window display of...	
...has been placed in my store, with my consent free of charge	
Size	Signature
NAME	
Street	
City	
Placed by	DATE

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displays are used.

Newspaper advertisements are taken on the

basis of space and as a result are paid when contracted

Window Displays are placed by representatives

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out the following form signed:

NAME	Address
City	State
The certifier that a window display of ..	
has been placed in my store with my con-	
sent of ..	
Signature	
Date	
ABC Company	
123 Main St.	

Selling

Important, essential and vital to the combined welfare and progress of any organization is the Sales Department--distribution and disbursement of products is its function.

In the business world of today, representatives or salesmen are necessary for the distribution of all products. Competition has made personal contact with the means of distribution a necessity in order to continue, maintain and increase the disbursement of products. Resulting from their contacts, order for merchandise are received which are written on the following forms:

THIS order sold subject to ACCEPTANCE						
A.B.C. COMPANY BOSTON, MASS. Sold to Street & No City & State Terr. No. SALESMAN						Order No Billed Extended Checked Stock Ledger Folio
		Req No.	Size	PRICE	AMOUNT	TOTAL
All orders are taken subject to price in effect at shipment						

Immediately after receipt all orders are forwarded to a department within a department, the Order Department, for registering so as to prevent loss in the handling of those orders and for future reference. Stamping consecutive numbers on all orders and recording those numbers in a book containing duplicate numbers constitutes registering. Contents of a registry book, the Order Register follows:

<i>DATE OF RECEIPT</i>	<i>Order No.</i>	<i>NAME</i>	<i>Terr. No.</i>	<i>SHIPPED</i>

Registered orders are then checked by members of the order department to insure correctness in assortments, type of packing, and mixtures wanted, as are sold in the respective territories.

The next movement of orders is to the Credit Department which approves or disapproves the order by a means of a notation on it as conditions may require as per that department's function.

Orders meeting with the approval or disapproval of the Credit Department are returned to the Order Department.

Approved orders are reorganized in rotation and are sent to the Shipping Department for dispatch. Orders received in the Shipping Department are signed for on the following slip:

<i>A.B.C. COMPANY</i>	
	<i>DATE</i>
<i>ORDERS BEARING REGISTER</i>	
<i>Numbers</i>	<i>to</i>
<i>INCLUSIVE HAVE BEEN RECEIVED</i>	
	<i>TIME RECEIVED</i>
<i>No</i>	<i>SHIPPER</i>

After acknowledgement all slips must be returned to the Order Department for filing and future checking. Disapproved orders are placed on file until proper approval can be given or correct disposition made.

After shipments are made the orders are returned to the Sales Department, where they are analyzed by types of mixtures shipped and then invoiced. Analyzation of shipments, as made, constitute the means of deduction from the perpetual inventory system controlling the stock used in shipments.

Traffic and Shipping

Invoicing, when completed, causes the orders to be turned over to the registry clerk who fills in the date of shipment as provided for in the Order Register. From the registry clerk, the orders are sent to the Accounting Department for recording and filing.

Daily reports are received from all salesmen. Daily reports are recorded, summarized and classified as the needs of the organization dictate by a clerk placed in charge of such work.

Sales Department procedure as outlined may seem lengthy and unwieldy, but, as stated before-- accounting systems are made to fit the type of organization for which they function. The system outlined, with some modification, is much like the systems generally used in concerns operating on a specific order basis. At the longest, from the time of receipt of orders until their final disposition in the Accounting Department, no longer than ten hours elapses in the system just discussed. Long use of the system considered has found it to be efficient and as expedient as desired.

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has convinced us that it is efficient and as expedient

as desired.

Traffic and Shipping

Serving the concern with a need nearly equal in importance to selling and regarding its welfare as highly as the credit department, we find a department organized for the purpose of conducting traffic and shipping routine.

In late years nearly all concerns have extended their territorial limitations, thereby increasing their sales; as well as, the amount of freight charges that they have had to pay on their merchandise shipments. In consequence, they have been obliged to control this expenditure until it has become a matter of specialization.

The shipment of merchandise--efficiently, accurately, and quickly has necessitated the organization and compilation of much data within the department. Shipping data is gathered on much the same principle as that gathered for the use of the Purchasing and Credit Departments. Another reason for the accumulation of such data is a ruling laid down by the Interstate Commerce Commission compelling all shippers to ascertain the proper rates on all freight that they desire to have shipped. Information with which to do this is supplied them as a result of that ruling.

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For every organization there are two types of freight--namely, "In Freight" and "Out Freight". Our first interest centers on "In Freight". "Foreign" concerns shipping in, as a matter of courtesy, notify the concern to which shipment is made when such shipments have been accepted by a common carrier. Arrival of shipments at the carrier's terminal, if made "F. O. B.", necessitates transportation by the purchaser. Truck drivers are notified of such shipments with instructions to secure them. Release is made by the following order:

Release for Merchandise

Mr.

Agent

Ry.

Please deliver to truck

A check will be mailed for freight charges

A.B.C. COMPANY

DATE

Per

SHIPPER

Merchandise released by the above order is delivered to the Receiving Clerk.

Shipping orders for "Out Freight", after being received from the Sales Department, are given singly to an "order picker"; whose duty it is, to

For every organization there are two types of freight--namely, "In Freight" and "Out Freight". Our first interest centers on "In Freight".

"Foreign" concerns shipping in, as a matter of course, notify the concern to which shipment is made when such shipments have been accepted by a common carrier. Arrival of shipments at the carrier's terminal, if made "T. O. B.", necessitates transportation by the purchaser. Truck drivers are notified of such shipments with instructions to secure them. Release is made by the following order:

To: <i>Mr. J. H. Smith</i> From: <i>ABC Company</i> Subject: <i>Freight Order</i> Date: <i>1/1/21</i>	Please deliver to: <i>123 Main St.</i> Order will be mailed for freight charges.
--	---

Merchandise released by the above order is delivered to the Receiving Clerk.

Shipping orders for "Out Freight", after being received from the Sales Department, are given singly to an "order picker"; whose duty it is, to

collect and stencil all merchandise recorded on the order.

Outgoing merchandise passes from the shipping room to the trucks by means of a belt conveyor. At the top of the conveyor, a second check takes place and as each shipment goes out the order is stamped by whom shipped, collected, and returned in rotation to the Sales Department.

Uniform bills of lading, adopted by transportation companies are made out for each outgoing order. A copy of the bill of lading is retained by the shipper as acceptance by the transportation company constitutes receipt.

Every week an itemized analysis of transportation charges are made up by the Shipping Departments. Bills when received from the transportation companies are checked against these analyses by the Accounting Department, which Department vouchers them, has them paid, and charges the amount to the proper expense account.

Two duties which are important to the successful conduct of any shipping Department are the tracing of delayed shipments and the filing of claims for losses or damages sustained in transit.

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Shipments delayed in transit can be traced by correspondence. Claims for losses and damages sustained in transit are filed with the transportation company on the following form which usually effects satisfactory adjustments or settlements for all parties concerned:

CLAIM SHEET	
RR. Co	OUR NO.
Delivered to At	YOUR NO.
FOR	DATE of CLAIM
ON SHIPMENT FROM To B/L DATED CONSIGNOR CONSIGNEE DATE CAR No. Covered by EXP. BILL No.	REMARKS A.B.C. COMPANY PER SHIPPER Sundry Losses
DATE	PAPERS to

The Credit Department

Acting in conjunction with both the Sales and Accounting Departments is the Credit Department. To prevent the taking on of all and any accounts from which payment could not be secured or would be doubtful is the work of the Department under discussion. Every order received by the concern is forwarded from the Sales Department to the Credit Department for written approval or disapproval. All orders shipped must contain this written approval or else the purpose of any such department is defeated. Written approval or disapproval is based on information contained within the department, which has been gathered much in the same style as the information contained in the Purchasing Department.

Collections are also a duty of the Credit Department. Whenever it is required, the Accounting Department forwards information to the Credit Department concerning accounts which have been carried to the extent of their time or credit limit. Time and credit-limits were established by the Credit Department with the receipt of the first order from any customer.

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These limits were communicated to the Accounting Department, who made notations of them on the records used for customer's accounts: and whose duty it is to notify the Credit Department when such limits have been reached.

Accounts which are impossible for the Credit Department to collect are turned over to a legal agency which makes every attempt possible to collect, and, who informs it of results being obtained.

Functioning as it should, a good credit department can save a concern a great deal of money that might otherwise be lost. Credit losses for the concern being specifically considered average less than one-fourth of one per cent on all sales.

These lists were forwarded to the Accounting Department, who made a selection of them on the basis of need for customer's accounts; and when they it is to notify the Credit Department when such lists have been received.

Accounts which are responsible for the Credit Department to collect are turned over to a legal agency which makes every effort possible to collect, and, when failure is or results being obtained.

Functioning in its knowledge, a good credit department can save a company a great deal of money that might otherwise be lost. Credit losses for the company being essentially considered average loss than one-fourth of one per cent on all sales.

The Accounting Department

Interdepartmental functions must be, it can be understood, affable, cooperative, and efficient for the smooth operation of the methods of routine used in any organization. Success of the organization is as dependent upon those factors as it is upon the information, facts, and analysis forming the basis of decisions, policies, and methods of management handed down by the executives.

Assembled and organized for the purposes of recording, summarizing, and tabulating transactions, as well as their analyzation for the executives is the Accounting Department--the guide to success in any business. A study of the Accounting Department necessitates the consideration of the procedure for handling Cash, Accounts Receivable, Sales and the Journal.

Cash Disbursements

Memorandum of transactions and value fluctuation are forwarded to the Accounting Department on certain forms prescribed for usage. Transactions primary to value fluctuation are purchases. Contact with the Accounting Department was first made by the Purchasing Department, with the value fluctuation being re-

corded on a voucher attached to a received invoice.

Vouchers within themselves are certifications and verifications as to the correctness of their contents, and to those things to which they may be attached. They are made out by persons who are directly responsible for their content; and, serve as a means to any procedure that the Accountant may take as a result of their presentment. A typical check voucher follows:

<i>Check Voucher #</i>	
<i>AMOUNT</i>	<i>Check No.</i>
<i>Payable to</i>	
<i>Address</i>	
<i>EXPLANATION</i>	
<i>Charge to</i>	
<i>Requested by</i>	
<i>Authorized by</i>	
<i>Date paid</i>	

which voucher would serve as the basis for a cash disbursement. Upon receipt and authorization of the voucher, a check in payment of it would be made out. Resulting, an entry would appear in the book of Cash Disbursements. Following is a specimen sheet of a typical book used for Cash Disbursements:

Cash Disbursements book for safe keeping. At all times, this fund must be equal to its creation either in cash or in approved vouchers made out for all payments.

recorded as a voucher attached to a received invoice.
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Check No.	Amount
	Payable to
	Address
	Examination
	Issued to
	Account by
	Authorized by
	Date paid

which voucher would serve as the basis for a cash disbursement. Upon receipt and authorization of the voucher, a check in payment of it would be made out. Resulting, an entry would appear in the book of Cash Disbursements. Following is a specimen sheet of a typical book used for Cash Disbursements:

Check No.	PAYEE	Voucher No.	AMOUNT PAID	DISCOUNT ON PURCHASES

RAW MAT.	Stores	Gen'l EXPENSE	Adv't	Fac't	S.W.	Freight OUT	General Ledger		
							ACCOUNT	F.	AMOUNT

At all times the book of Cash Disbursements should equalize itself into corresponding debits and credits. At the end of fiscal periods, summary entries are made and posted to the General Ledger Accounts.

Often it happens that small and immediate expenditures must be made in cash. Control over this type of expenditure is made through the establishment of a fund, for which the Cash Disbursements clerk is held responsible. The Petty Cash Fund, as it is called, is created on what is known as the "Imprest Basis".

Creation of the fund is made by the cashing of a check, the amount of which is turned over to the Cash Disbursements clerk for safe keeping. At all times, this fund must be equal to its creation either in cash or in approved vouchers made out for all payments.

Serving the purpose of a Petty Cash Voucher is the following form:

<i>Petty Cash Voucher</i>		
<i>DATE</i>	<i>No.</i>	<i>4</i>
<i>AMOUNT of Disbursement</i>	<i>\$</i>	
<i>Charge to</i>		
<i>For:</i>		
<i>MONEY Received by</i>		
<i>APPROVED</i>		
<i>AUTHORIZED</i>		

Depletion of the fund by payments necessitates replenishment. Replenishment can be made at frequent and regular intervals or as needed. When replenishment is desired a check is drawn to the extent of all approved and paid vouchers. All vouchers for expenditures are at that time distributed in the following book of entry for summarization and posting:

Concurrent with the necessity of control for cash disbursements is the necessity for control of all cash receipts.

Essentials to a good cash system is the daily deposit of all cash receipts, disbursements made by check, and petty expenditures made through the medium of a Petty Cash Fund.

Cash receipts in most all businesses are received from at least one of two sources--salesmen or direct collections. The concern whose methods we have been viewing and considering receive them from both sources. Direct collections as received in the Accounting Department are noted on the form made out at the opening of the mail. Salesmen's collections, accompanied by check or currency are recorded by them on the following form:

[illegible]

All collections, direct and indirect, are entered on the Cash Receipts books in summary and by sheet numbers. Upon completion of summarized postings, the collection sheets are turned over to the Accounts Receivable clerk or clerks.

A sample Cash Receipts book follows:

[illegible]

NAME		RATING		CARD No.		
Address		Limit				
Proof	DATE	MEMO	F.	Debit	✓ Credit	✓ BALANCE

The above form is a card kept and filed within the Accounting Department. Summaries are made from these forms monthly, which are checked against balances taken from the total of sales less the total of cash received on Accounts Receivable for that period. Accuracy and correctness of work is thereby insured.

Sales

Organizations selling specific and various types of units produced find it necessary to keep a Sales Register. Following is a sample or typical Sales Register:

DATE	BILL No.	NAME of CUSTOMER	F	Accounts Receivable	Sales			
					A	B	C	D.

In the type of concern producing on the general order basis, such a procedure is not necessary. On the following form, entries are made by the persons in control of the stock used in shipments ledger.

Daily Recapitulation of Shipments for						
Type of Mixture						
A	B	C	D	E	F	

The above sheets are checked against the total daily shipments and then computed by the Accounting Department for the total volume of Sales. Once a month summary computations which render the total value of Sales and Accounts Receivable for that period are made and from which, the proper entries are made.

The Journal

Designed to take care of all entries which cannot be handled on other books of original entry or subsidiary ledgers is the Journal. Its rulings are very much

the same as the journal voucher used in large organizations to authenticate all entries made in it. A sample Voucher follows:

<i>DATE</i> <i>JOURNAL Voucher</i> <i>Requested by</i> <i>Authorized by</i>		<i>No.</i> <i>Posted</i> <i>DATE</i>	
	<i>J</i> <i>PAGE</i>	<i>Debit</i> <i>AMOUNT</i>	<i>Credit</i> <i>AMOUNT</i>
<i>Dr.</i> <i>Cr.</i> <i>EXPLANATION</i>			

Entries from the Journal are posted to the Ledger as made and individually; as the record of transactions or value fluctuations within it cannot be posted in summary due to their individuality.

Fiscal periods, when ended, mark the completion of business operations. Decisions, policies, and methods of management, crystallize themselves into the record of value fluctuation as shown in the balances of transactional classifications accounts. Analyzation of those accounts by the Accountant for the executives will be the basis for their further decisions, policies, and methods of management for the ensuing fiscal periods.

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to authenticate all entries made in it. A sample Voucher
follows:

Journal Voucher		No.	
Date		Page	
Particulars		Debit	
		Credit	
		Total	

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tions or value fluctuations within it cannot be posted in
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of management for the ensuing fiscal periods.

A Public Service Company

"Continuous service" is the leaving of the meters in the property of (The Edison Electric Illuminating Co.) of Boston

In this company which belongs in the Public Service Utilities group the Accounting and Bookkeeping features of the entire organization come under the main heading of the Auditing Bureau which is composed of four departments:

The Billing Department

The Accounting Department

The Cashier's Department

The Collection Department

Therefore, they are to be taken up in the order that they affect the customer. If however, it was to be in the order of importance the Accounting Department would be first.

A. The Billing Department

The customer is affected by what is done by the Billing Department first. The Billing Department has 255 employees and is the largest in the Auditing Bureau.

There are approximately 380,000 meters in the system. This does not mean that there are 380,000 customers because they leave what they call "continuous service".

"Continuous service" is the leaving of the meters in the property where service has been supplied, even though the customers are discontinued. It saves the Company from going out and installing meters where their current will be used again. It also saves going out and re-fusing the meters, this work being all unnecessary because the amount of current that goes through the meters by unknown users is small, so why worry. This plan has resulted in a material saving to the Company.

They supply forty cities and towns with electric current. In all they have approximately 610 square miles of territory over which their lines run. There is no department in the Company, no person who is able to tell them just how many customers they have. They can make a rough guess, a pretty good guess by those supposed to know and it is between 340,000 and 350,000 customers.

There are 80 meter readers that read, or attempt to read 380,000 meters each month. They have a great many series meters in their lines and by series meters is meant meters that are installed on the customer's code of their meter. For example, if a concern owns a large building and lets part of the building to others, and desires to take advantage of a better rate, they will leave the entire amount of current billed to them and by a series meter are able to tell how much is used by each tenant.

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There are 30 meter readers that read, or attempt to read 380,000 meters each month. They have a great many series meters in their lines and by series meters is meant meters that are installed on the customer's side of their meter. For example, if a concern owns a large building and lets part of the building to others, and desires to take advantage of a better rate, they will leave the entire amount of current billed to them and by a series meter are able to tell how much is used by each tenant.

The Billing Department is divided as follows:

a. Contract Records Division.

b. Order Reading Division.

c. Meter Records Division.

d. Calculating Division.

e. Billing Division.

f. Statistical Division.

g. Addressograph Division.

A. The Contract Records Division has the filing and examination of all the completed orders. These orders are examined for correctness and then are filed away for future reference.

B. The Order Reading Division. If a customer asks for a discontinuance on a certain date, of course, they cannot and do not wait until their regular meter reader goes there. They have to comply with their request and there are several men who read meters for the rendering of the final bill on orders of discontinuance. That is, the final readings of the discontinued customer.

C. The Meter Records Division see that all of the meter slips are kept in order, so that they can be sent down to the meter reader at a certain time of the

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connected customer.

C. The Meter Records Division see that all

of the meter slips are kept in order, so that they can be

sent down to the meter reader at a certain time of the

month. The correlating of all these records getting them together, and making sure that every meter is read every month is an important part of the work.

D. The Meter Reading Division. There are 80 meter readers who go all over their 610 square miles of territory. Of course the portion of the meter books that are to be read the following day are sent to him the night or afternoon before and he sorts them among the 80 meter readers who obtain the readings. The readers return before five o'clock with the readings registered in their books.

E. The Calculating Division has for its work the figuring of the bills, also the verifying of the amount of the bill after it comes from the Billing Division.

F. The Billing Division uses 15 Burroughs Public Utility Machines. At one time the company made out all their bills by long hand. The machines take the place and type the bills. There are two set-ups on the key board, press the operating bar three times and the entire bill is made out.

The bill as typed by the machine is composed of four distinct parts and they are as follows:

the paymer

The Remittance coupon.

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
39 BOYLSTON STREET

COPY

AMOUNT

PREVIOUSLY RENDERED

TOTAL AMOUNT DUE

3. The collector's coupon which is the documentary evidence of the amount received and the amount due from each customer which goes through his hands.

The Collector's coupon.

BL.

P.

B.

NO.

COPY

AMOUNT

TOTAL AMOUNT DUE

4. The customer's ledger record coupon which has an important part of the work of the Accounting Department.

—LEDGER—

COPY

DATE	CREDITS	AMOUNT
TRANSFERRED TO — FROM		

FORM 41R-1½M 2-30

The Customer's ledger record.

G. The Statistical Division, of course, the Company wants to know how much money is charged for certain kinds of service such as large power service, certain rates that we have, etc. The Hollerithe Tabulating System is used for this purpose and holes are punched in cards showing the account, number, date, kilowatt, consumption, and amount and class of business. By running these cards through the

tabulator much valuable information can be had with minimum amount of work.

H. The Addressograph Division is an important part of the Billing Department. Blank bills are headed by the addressograph, and each of these different customers has a link which prints on the bill the name, address, and account number. There are enough to take care of 350,000 customers. They are arranged so that the bills for the right districts will be headed up at certain times of the month so that they can go to the Billing Division at the right time, or just the day the meter readers return with their readings. In other words the printing of the bills is done at about the same time that the meters are read for the same district. The meter reader first reads the meter and then returns to the Billing Division.

The Accounting Department is composed of three divisions with a total of 112 employees.

- a. The Bookkeeping Division.
- b. The Disbursement Division.
- c. The Mercantile Billing Division.

A. The Disbursement Division has to keep a record of all the appropriations. If a certain piece of work has to be done by the Company an appropriation

has to be made to cover the cost. The expense of the job is charged against this appropriation and the record of of the amount that they still have unspent in appropriation. It also has the making up of the payrolls, the paying of all bills after they have been OK'd by the Purchasing Department, the making out of checks for refunds to customers.

B. The Mercantile Billing Division has the keeping of the lease accounts. Of course, they sell a great many appliances on the lease plan--deferred payment plan. The lease accounts are not the only accounts handled by the Mercantile Billing Division. They make a record of all appliances sold and charges in full to the customer's account. They make out bills for steam sold by this Company, meter rentals, time switches, and broadcasting charges, as well as everything the Company has to sell outside of electric current.

C. The Bookkeeping Division of the Accounting Department. At one time they kept the Accounts Receivable in a Boston Ledger. The Boston Ledgers were loose leaf ledgers with sheets about twenty four inches long and fifteen inches wide. By this means of keeping customers records, every charge that went into a customer's account whether it was for electric service or for mercantile billing had

to be posted in pen and ink. Of course, when the payment came in, a credit pen and ink posting had to be made on the Boston Ledgers.

At the end of the business month, those all had to be added and balanced. It was some job to balance those ledgers and to get a total of all the ledgers that would balance with the amount shown on the Company's Trial Balance Sheet against Accounts Receivable.

On the extreme right of the bill prepared by the Billing Division is a ledger coupon. The detaching of this ledger coupon and inserting it in a tray takes the place of a debit pen and ink posting.

This is often referred to as the Stub Plan of Keeping Customer's Accounts. When the customer pays the bill, instead of making a pen and ink credit posting, the stub is removed from the active tray and put in with the paid stubs. It is a tremendous saving of time and energy with just as good a record. By this means they are able to cycle-balance, which is a big help, rather than waiting until the end of the month. By cycle-balancing they mean balancing at any time during the month, a certain number of accounts.

They have 325 balancing sections of approximately

1000 accounts each. A cycle-balance is taken at the time when the least number of stubs are in the active trays which is, of course, just prior to the sending out of the bills in the district. That means that instead of balancing all of their accounts at the end of the business month as they were doing with Boston Ledgers, they are now able to balance every day of the month a certain number of their accounts. That relieves a tremendous peak of work, and it makes the way smooth with no valleys and no peaks. An approximate total of their Accounts Receivable for one month would be \$2,283,446.52.

The Cashier's Department.

Every one is interested in this. This is where the payroll originates. The Paymaster goes to the bank every Thursday and makes up the payroll and it is brought from the Old Colony Trust to the Edison Building via Brink's Express. The occupants of this steel armoured car carry for protection revolvers. The most important business is accepting and distributing the money paid to this Company. Twenty-one to twenty-two pay stations and the same number of district offices. The paystations are paid at a rate of 2¢ per coupon. Collections are all assembled at the Cashier's office--regardless of whether they are made at receiving tellers, paystations, district offices, or collectors they

are sent to this office with the remittance coupons.

They are all sorted into various districts corresponding to the same order of the Accounts Receivable. After they are sorted into account number order, a listing is made by the Burroughs Adding Machines and these lists with the remittance coupons are sent to the Accounting Department. That is where the Accounting Department takes the unpaid stubs from the active file and places them in the paid file. There are two deposits made with the Old Colony Trust Company every day. The Brink's Express calling at nine o'clock and at twelve o'clock noon.

The Collection Department.

If the customers do not pay their bills, that is, where the Collection Department functions.

There are three divisions:

- a. The Collection Division.
- b. The Credit Division.
- c. The Receiving Tellers.

C. The Receiving Tellers. You go to the Receiving Tellers window to pay money and get a receipt there of, also they give receipts for deposits for guarantee of payment of bills. Their main duty is receiving money and balancing cash.

B. The Credit Division. Their main duty is to pass on the credit of customers who apply for service, also to approve the sale of appliances for sums over \$7.50. Keeping the "black list" file is a duty of theirs, which means that if a customer goes off their lines owing a balance a record is made of it. If they ever come back on their lines this balance is transferred to the active account. The following statistics would indicate that most people are honest.

81% pay their bills without attention.

19% delinquents.

$\frac{1}{2}$ of 1% actual loss.

The number of notices which are sent out for one month to customers asking them to pay their bills were 24,667. All that were discontinued were 888. Of these 510 were restored immediately.

When they came home at night and turned on the switch and could not get any light they came in and paid the bill and service was restored.

The Edison Electric Illuminating Company
of Boston.

PART THREE

The Appreciation Unit

This is a public utility corporation supplying
an essential commodity to the community which cannot be
supplied adequately by the individual themselves.
The company is engaged in the production, trans-
mission and distribution of electrical energy for house-
hold and industrial purposes and in the sale of electri-
cal appliances.

The success of this enterprise is dependent
upon the goodwill of the community which is served by
it. To merit this good will and to retain it, a service
of high standard must be developed and maintained and
this is only possible through the efficient operation
of every department contributing to that service.

Our study of this organization will only in-
clude the accounting and bookkeeping features; neverthe-
less, in order to give an appreciation of the magnitude
of the company I am enclosing a map which shows the ter-
ritory supplied with continuous service twenty-four hours
a day, every day in the year.

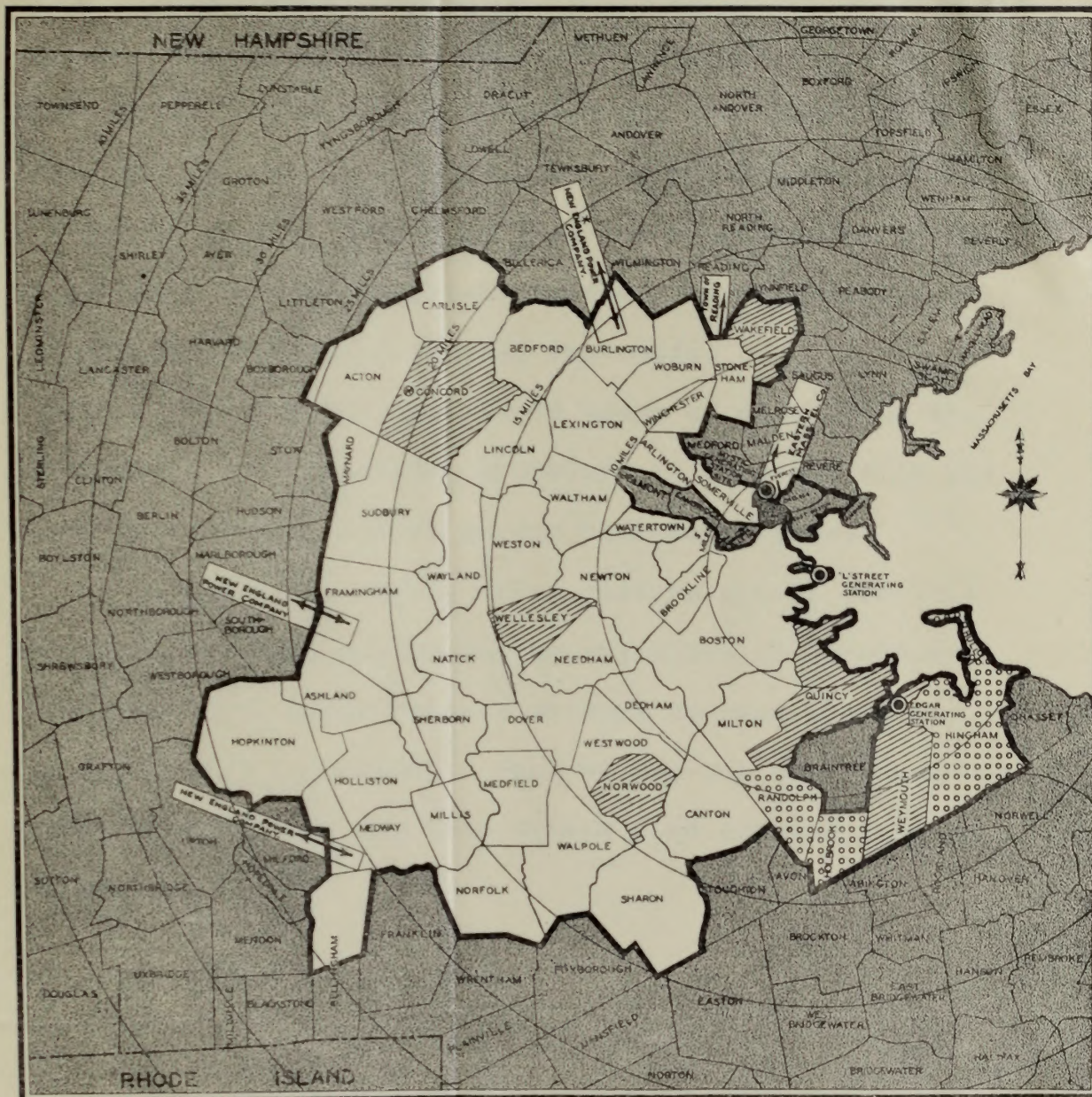
The Edison Electric Illuminating Company
of Boston.

This is a public utility corporation supplying an essential commodity to a community which cannot be supplied advantageously by the individual themselves.

The company is engaged in the production, transmission and distribution of electrical energy for household and industrial purposes and in the sale of electrical appliances.

The success of this enterprise is dependent upon the goodwill of the community which is served by it. To merit this good will and to retain it, a service of high standard must be developed and maintained and this is only possible through the efficient operation of every department contributing to that service.

Our study of this organization will only include the Accounting and Bookkeeping features, nevertheless, in order to give an appreciation of the immensity of the company I am enclosing a map which shows the territory supplied with continuous service twenty-four hours a day, every day in the year.



FORM 1500

MAP SHOWING TERRITORY SUPPLIED BY
THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
Jan. 1, 1930

In white areas, company furnishes total requirements and distributes locally; in cross-hatched areas, company furnishes total requirements in bulk; in dotted areas, company furnishes total requirements through an intermediary distribution authority; arrows indicate co-operative service furnished to other light and power companies.

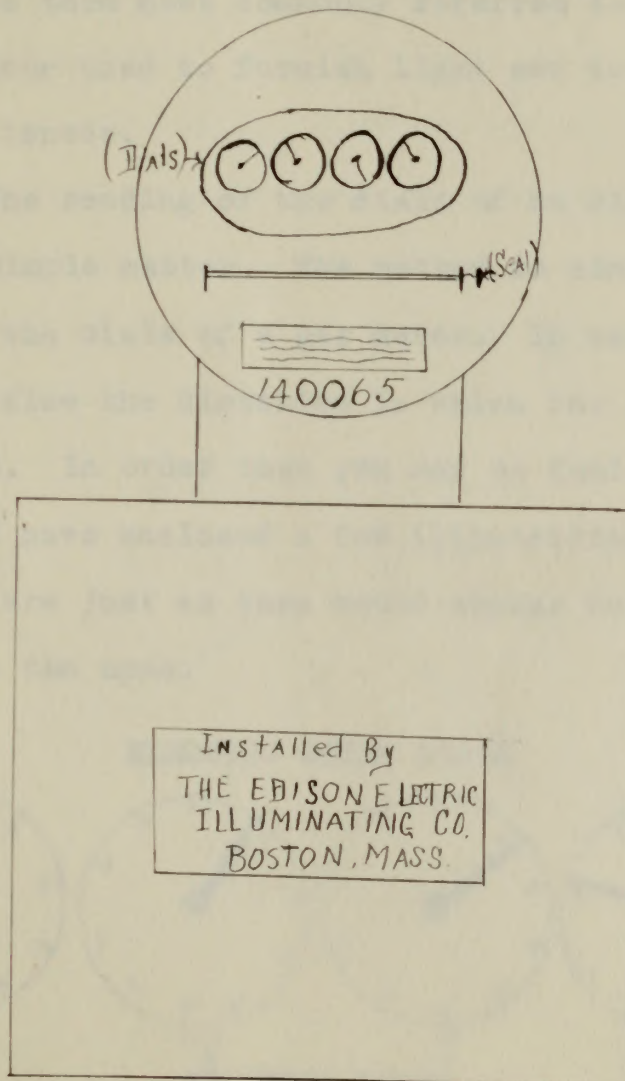
The company supplies forty cities and towns with electric current. In all they have approximately six hundred and ten square miles of territory over which their lines run. There is no department in the Company, no person who is able to tell them just how many customers they have. They can make a rough guess and it is supposed to be between 340,000 and 350,000 customers.

Perhaps the most vivid means of describing the bookkeeping and accounting procedure is to start with the visit of the meter reader at our customers' homes.

There are eighty meter readers who go over the company's six hundred and ten square miles of territory and these eight meter readers attempt to read about 380,000 meters each month. Thus we can see the tremendous number of customers who must obtain good service from our company.

The Meter Reader's Visit.

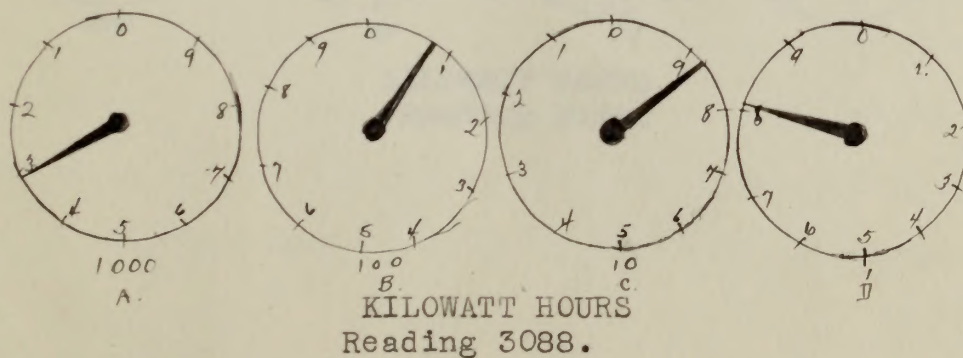
The meter reader calls at a customer's home in a certain district at approximately the same day each month. He enters the home and goes directly to the meter. Mr. Sims, whom we will follow, is the meter reader in this district. The meter which he is to read is located in the basement of the home and looks somewhat like this:



He reads the dials on the meter which records the number of kilowatt hours which are recorded there. First we will consider what a kilowatt hour means. A watt is the unit of measure of electric power. For example a 15 Watt Electric-Light Bulb is one that requires a power of 15 Watts to keep it burning. A kilowatt hour which is the term most commonly referred to is a 1000 Watts per hour used to furnish light and to operate electrical appliances.

The reading of the dials of an electric meter is a very simple matter. The method is similar to that of reading the dials of a gas meter. In taking down the figures, notice the direction in which the pointer has just passed. In order that you may be familiar with the procedure I have enclosed a few illustrations. The dials shown here are just as they would appear to Mr. Sims when he calls at the home.

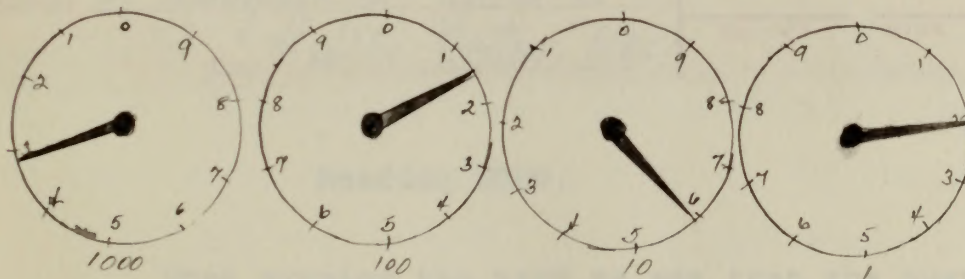
ELECTRIC METER DIALS



Upon studying the illustration we notice that dial "A" records the 1000 kilowatt hours and in order to move the pointer of dial "A" one notch (the dials are divided into 10 parts or notches), the pointer of dial "B" must go around the entire dial. The pointer of dial "C" must go around the entire dial before pointer "B" moves a notch. The pointer of "C" only moves one notch when dial "D" has been covered. This electric meter is in the home of Miss Nellie Weickers and was read as shown by the illustration by Mr. Sims on February 24, 1930.

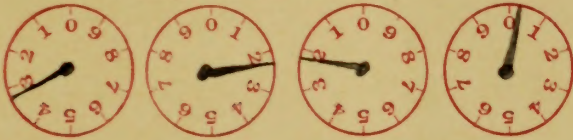
Another illustration follows which shows the electric meter of Miss Nellie Weickers when Mr. Sims called at the house on Mar. 25, 1930.

ELECTRIC METER DIALS



KILOWATT HOURS
Reading 3162.

In order to bring the reading of a meter more directly home to us I am including a card which is sent out by the Edison Electric Illuminating Company of Boston from the Billing Department. It is left in case a customer is not home on the day the meter reader calls at her home.

To Our Customer: As we are unable to read your electric meter will you kindly mark on these circles the position of each of the hands as they appear on your meter dial and return this card to us through the mail. The E. E. I. Co. of B.		Card Left 4/24/30	Book
ELECTRIC METER 		Account Number 289-167	
Figures <u>140065</u> on meter case		Class 1	District 36
Name <u>Miss Nellie Weickers</u>		Rate 10¢ per kWh	Area 100¢ per kWh
Address <u>49 Stoughton St., Suite 2</u>		Date 4/24/30	Reading 3220
Date <u>4/24/30, Boston, Mass</u>		Kw-hr. <u>58</u>	
Net Bill		Form 1409 B M 119 B	

Reading 3220.

Upon examining the card we see that the customer Miss Weickers is requested to mark on the dials the position of each of the hands as they appear on her meter dial and return this card to us through the mail.

When we look at the meter dials on the card we find that it reads:

3220 Kilowatt Hours.

Possibly you have received such a card when the meter reader called at your home and could not get in to read the meter.

In order to make the work of the meter reader and the other necessary bookkeeping procedure more realistic we will call this customer's home we are visiting;

Miss Nellie Weickers
49 Stoughton St., Suite 2
Boston, Mass.

She became a customer, September 23, 1928 and an Order Form was made out upon the information supplied to the Contract Records Division which has the filing and examination of all the completed orders. These orders are examined for correctness and then are filed away for future reference. If Miss Weickers had not a meter in the home, that is, if it was a new house, the installation department would have taken care of and recorded the information.

There are, however, certain preliminary requirements for obtaining electric service. The person must apply at one of the company's offices and if the service applied for is of a standard character it will be furnished provided that certain specifications have been met with regarding the wiring and other electrical equipment. Also

the applicant must make a cash deposit upon which the company pays interest at 5% per annum.

From the form of Order enclosed we find the name, address, meter no., date, rate, account number and the cash deposit of \$5.

Date 9/23	St. No. 49 Staughton St	Suite S2	Meter No. 5-115-2
District 1	Business 1	Town Boston	
Salesman 304	Name Miss Nellie Hecker		140065
Change of Name from			To date from 8/23/28
Phone No. Sta 4-278			Rates B
Service Applied for			Sq. Feet Area 1000
Remarks			Account No. 284-167
			Book Class K
Former or Present Customer at New Customer			Date 9/23
Business or Residence Address			Reading 2232
Year Disc.			
Years			Kw-hr.
Deposit \$5			Net Bill
Owner of Property			
Credit			

THE E. E. I. CO. OF C. FORM 1760C 150M 9-29

This deposit is given back when the service is discontinued or terminated. The Order Reading Division of the company takes care of this. If a customer asks for a discontinuance on a certain date (by giving ten days notice in writing), this department sends out a man who reads meters for the rendering of the final bill on orders of discontinuance.

There are several entries on this order form which will be taken up later on. At the present time, however, I do wish to bring out the matter of "Rates B". This means that Miss Weickers will be charged the "B" Residence Rate which is:

Rate:

8.5 cents per kilowatt hour for the first 2 kilowatt hours per month per 100 square feet of flour area. The minimum area of a house at this rate is 1000 square feet of floor area and therefore every bill to be charged at this rate will be for 20 kilowatt hours.

5. cents per kilowatt hours for the next 70 kilowatt hours per month.

3. cents per kilowatt hours for the excess.

This "B" residence rate is figured in conjunction with the number of Square Feet Floor Area. The area of a single house is computed from the outside dimensions of the building and the number of floors. The minimum area, in each case, is 1000 square feet. Also there is a minimum charge of \$9.00 per year. A customer does not really become of profit to the company unless he is paying \$12.50 a year at the least.

We have seen how the electric meter is read and we will proceed with the study further. The meter reader enters into his meter book on a separate page for the cus-

tomer Miss Weickers, the name, address, meter no., area, rate, the same as it is on the order form. Also on the first line at the bottom he enters the date and the reading of the meter.

A page from the meter reader's book follows on the next page.

TYPE E, T, I, CO. OF E. FORM 1770-AZ ROOM 5-27

P-321

Mail to

COPY

Service Address

Miss Nellie Hueckey
49 Stoughton St. S2
Boston Mass
289-167

Dist.

36

Rate

B

Bus.

1

AREA 1000 Sq. ft.

Meter

Amp. 5 No. 14 0065 1

Location

Basement

Date	Reading	Kw. hrs.	Amount	V	Date	Reading	Kw. hrs.	Amount	V
Nov 22	OMIT								
SIMS									
Oct 23	2834	49	B						
SIMS									
Sept 23	2791	70	7.90 B						
SIMS									
AUG 23	OMIT								
SIMS									
JULY 24	2721	27	B						
SIMS									
JUN 24	2694	25	B						
SIMS									
MAY 23	2669	26	B						
SIMS									
Apr 24	2643	36	B						
SIMS									
MAR 25	2607	41	B						
SIMS									
Feb 23	2566	48	B						
SIMS									
MAY 1910	2518	64	M		Apr 24	3220	58	B	
SIMS					Sweet				
MAXFIELD	2454	50	M		MAR 25	3162	74	B	
SIMS					Sweet				
Nov 22	2404	41	M		Feb 24	3088	80	B	
SIMS					Sweet				
Oct 22	2363	31	M		JAN 23	3008	81	B	
SIMS					Sweet				
9/23/28	2232				Dec 21	2927	93	16.05 B	
					Sweet				

The electric meter for September 23, 1928 reads, 2232 kilowatt hours. This is the date the new customer comes onto our lines and of course, she receives no charge. These meter slips are examined and kept in order so that they can be sent down to the meter reader at a certain time of the month by the Meter Records Division of the Company. The correlating of all these records and making sure that every meter is read every month is an important part of the work.

From the meter book page we find that Mr. Sims, our meter reader, called at Miss Weickers and read the meter October 22 as being 2363 kilowatt hours. While at the meter he deducted last months reading from this months.

Oct. 22, 1928	2363	Kilowatt Hours
Nov. 8, 1928	<u>2232</u>	" "
	31	" "

At the end of the day before five o'clock the reader returned to the office with his book and turned it into the head of the Meter Reading Division. The head of this division sees that the readers turn in their books each night and receive one covering the homes they are to call on the next day.

The Meter Reader's Book in the
Calculating Division.

The following morning the meter book containing Miss Weickers' page went to the Calculating Division Office where they first checked over the amount of kilowatt hours used. The employees of this office are highly skilled and at a glance they would verify the number of kilowatt hours used by Miss Weickers for October.

Oct. 22, 1928	2363 kilowatt hours		
Sept. 8, 1928	2232	"	"
	<u>31</u>	"	"

Thirty-one kilowatt hours were used the first month since Miss Weickers came on to the service lines of the Edison Electric Illuminating Company of Boston.

The next month Mr. Sims called at Miss Weickers' home and the meter read, 2-4-0-4. The clerk would again find the amount of electricity used for November.

Nov. 22, 1928	2404 kilowatt hours		
Oct. 22, 1928	2363	"	"
	<u>41</u>	"	"

The clerk would look at the figures of Mr. Sims, the meter reader, and see if they agreed. His figures show 41 kilowatt hours as the amount used in this column for the month of October. The clerk would then check this page as being correct and pass on to the next page for the next customer.

The next month the meter reader called at Miss Weickers and the meter dials read, 2-4-5-4. The clerk when she received the meter book in December would perform the usual operation

Dec. 22, 1928	2454 kilowatt hours		
Nov. 22, 1928	<u>2404</u>	"	"
	50	"	"

Then she would look at the meter reader's figures and see if they agreed. Of course, if the meter reader had subtracted wrong at the meter this would be the opportunity to change and correct the amount of kilowatt hours used. In this way we would be sure that the bill would not be made out wrong and the customer would not be charged for a greater amount of electricity than she used.

Another meter reader, Mr. Maxfield called in January and entered the reading of the dials as 2-5-1-8. When the clerk received the meter book that month she found the amount of kilowatt hours used, as follows:

Jan. 23, 1929	2518 kilowatt hours		
Dec. 22, 1928	<u>2454</u>	"	"
	64	"	"

She checked back on the figures of the meter reader's and found them to be correct.

In February Mr. Maxfield called again and took down the readings of the meter dials as, 2-5-6-6. When the clerk received the meter book that month and turned to Miss Weickers page, she checked over the figures.

Feb. 23, 1929 2566 kilowatt hours

Jan. 23, 1929	<u>2518</u>	"	"
	48	"	"

Mr. Maxfield also showed 48 kilowatt hours as being used by this customer, Miss Weickers, during February.

Mr. Sims the other meter reader called in March and the meter dials read 2607 as shown on the meter page of Miss Weickers. The calculating clerk when she received the meter book would check the figures for the amount of kilowatt hours used.

Mar. 25, 1929 2607 kilowatt hours

Feb. 23, 1929	<u>2566</u>	"	"
	41	"	"

The meter reader also showed the kilowatt hours as being 41.

The meter reader called again in April and took down the reading of the meter dials 2-6-4-3. Then he called at the next home on the street and performed the same thing. The meter book was received by the clerk in the Calculating Office and she found that Miss Weickers

used 36 kilowatt hours for this month.

Apr. 24, 1929	2643 kilowatt hours		
Mar. 25, 1929	<u>2607</u>	"	"
	36	"	"

This was checked against the meter reader's figures and found to be correct.

In the manner illustrated above, the calculating clerks check over the readings and the amount used for every customer on the companies lines. One can just barely imagine the number of books and entries which are checked when we remember that there are about 350,000 customers who are supplied each day of the month with electricity.

The clerk who checked the meter book which contained Miss Weickers' meter readings found the amount of kilowatt hours for the following months to be correct with the figures of the meter readers, Mr. Sims and Mr. Sweet.

May 23, 1929	26 kilowatt hours used.
June 24, 1929	25 kilowatt hours used.
July 24, 1929	27 kilowatt hours used.

On August 23, 1929 Mr. Sims called at Miss Weickers' home but she was not in and he left the meter reading for that month blank. The Billing Division Office would send a card as illustrated on page seven to Miss Weickers' home

and she would show on the printed meter dials the position of the pointer on her electric meter dials.

Mr. Sims called at her home September 23, and the meter read 2-7-9-1. When the clerk in the Calculating Division Office received the meter book she would verify the meter reader's figures, as follows:

Sept. 23, 1929 2791 kilowatt hours

July. 24, 1929 $\frac{2721}{70}$ " "

She looked at the amount of kilowatt hours the meter reader entered for the month and found them to be 70. We notice on the meter page on page one hundred the amount of \$4.90 to the right of the kilowatt hours column. This is the amount of Miss Weickers bill for the two months period. The manner in which this amount is arrived at will be taken up later on in our study.

The clerk checked over the meter readers figures for the following months and found them to be correct.

Oct. 23, 1929 43 kilowatt hours used.

Nov. 22, 1929 00 omitted (not at home).

Dec. 22, 1929 93 kilowatt hours used.
(this was for two months)

Jan. 23, 1930 81 kilowatt hours used.

Feb. 24, 1930 80 kilowatt hours used.

The Billing Department

On March 25th, Mr. Sweet called at Miss Weicker's and took down the reading of the meter dials as being 3-1-6-2. When the clerk in the Calculating Division was checking this book she checked over the kilowatt hours used in the following manner:

Mar. 25, 1930	3162 kilowatt hours		
Feb. 24, 1930	<u>3088</u>	"	"
	74	"	"

She looked at the meter reader's figures in the kilowatt hours column and found them to be correct.

The Billing Department

This department is the largest in the Auditing Bureau of the company because all of the bills for the 350,000 customers must pass through their hands. There are two hundred and fifty-five employees in the Billing Department besides the numerous machines which have been installed to facilitate the tremendous amount of work which has to be done to see that the company receives the proper revenue for the amount of electricity sold each month.

The meter book which we have studied went to the Billing Division of this department after it was verified by the clerks of the Calculating Division. Formerly the billing clerks made out all the bills of customers by long hand but now with the introduction of the machines which I am about to describe and illustrate, this work has been considerably reduced.

The Edison Electric Illuminating Company has fifteen Burroughs Public Utility Machines. The first cut shows how the machine looks just before the operator sits down to commence her work. This first illustration shows:

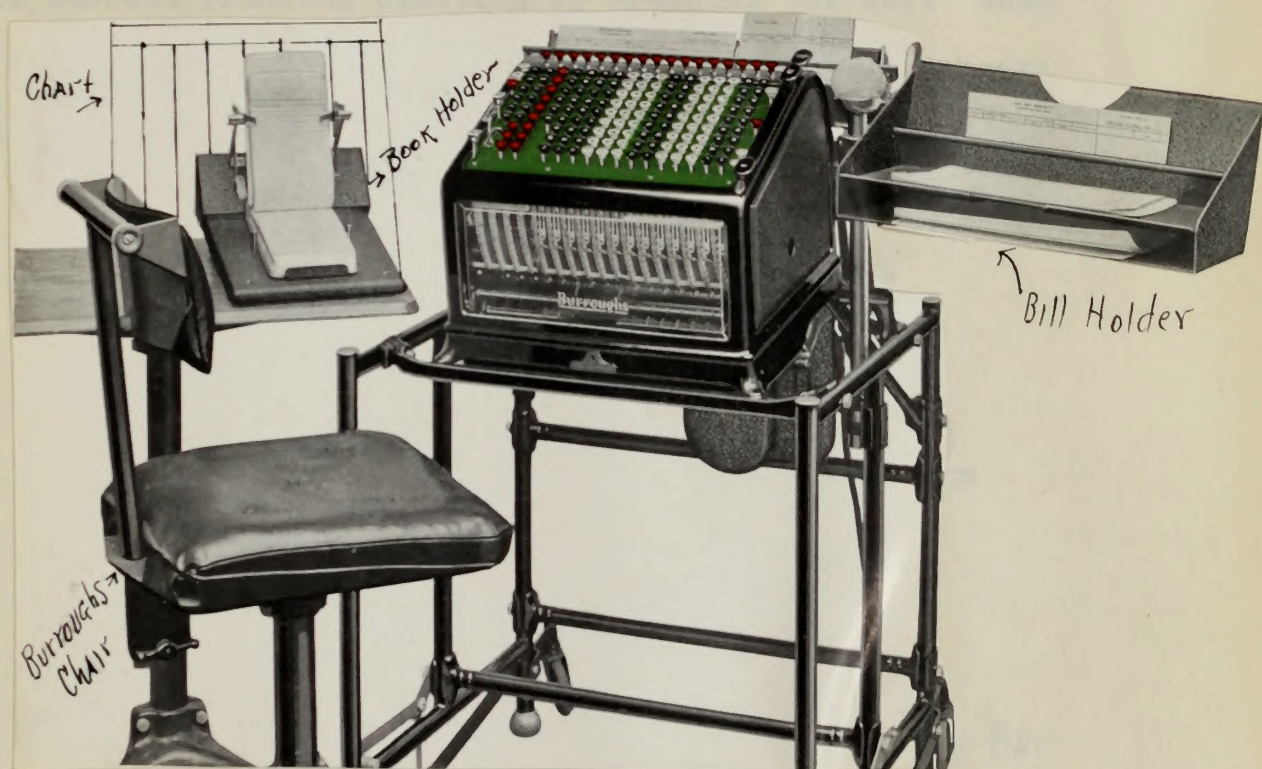
a. Burroughs Chair which can be adjusted to suit individual requirements.

b. Burroughs Meter Book Holder specially designed to enable the pages to be quickly turned and held in place mechanically. The pages of the book may be turned

by one hand.

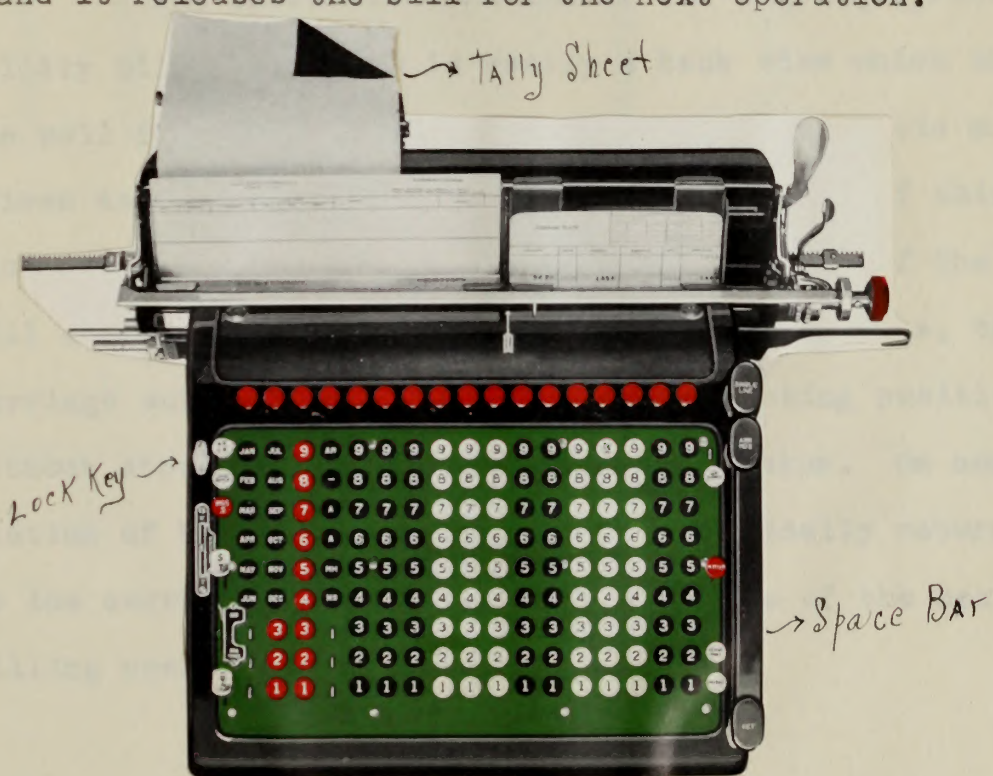
c. Burroughs Ledger Table which is used for holding meter book holder, rate chart, or other necessary data.

d. Burroughs Bill Holder which has three sections, one for addressed bills, one for completed bills, and one for blank bills. This is of all-metal construction.



BURROUGHS PUBLIC UTILITY MACHINE

The second cut shows the face of the key board of the machine. Directly above the platen (this is at the top of the machine around which the bill is rolled into place) is a magazine or container to hold a supply of bills which are quickly fed into the machine. Paper guides and adjustable stops are so arranged that the bills drop to the correct printing position by pressing the bar. When a bill is completed the carriage is automatically thrown back and it releases the bill for the next operation.

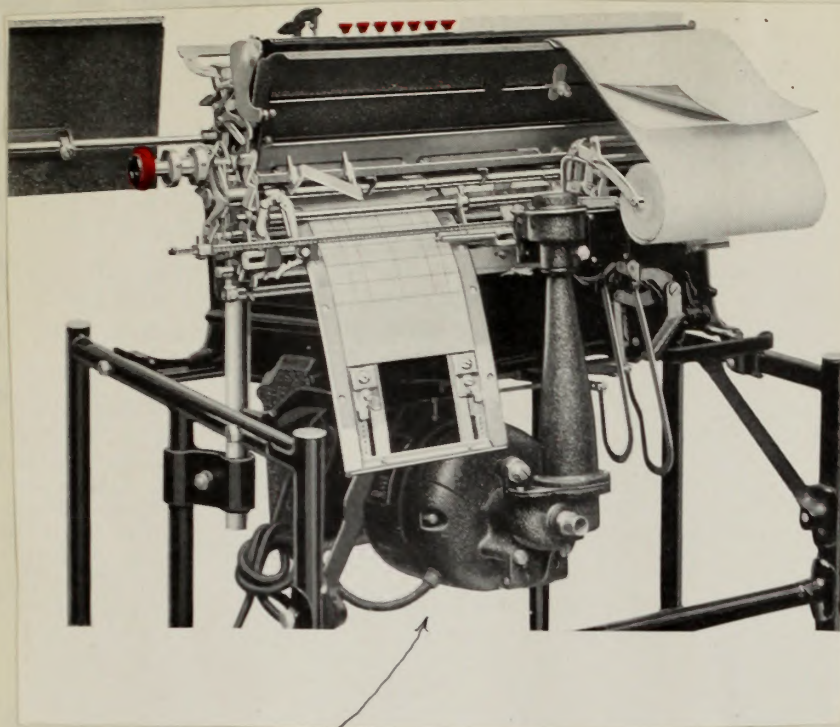


FACE OF THE KEY BOARD

As the bills are printed carbon impressions are made on a recap or tally sheet that feeds around the platen like a sheet of paper in a typewriter. The various totals accumulated in the machine are printed at the bottom of these sheets by the use of a total key. A better view of the tally sheet is to be seen in the next illustration. It is the roll which may be seen in the upper right corner of the cut.

The third illustration of the Burroughs Public Utility Billing Machine is really a back view which shows the roll for the tally sheet and also the automatic motor driven carriage which simplifies the operation of this machine. The same figures printed on the body of the bill are automatically repeat-printed on the stubs, the carriage automatically selecting each printing position without attention on the part of the operator. On completion of the bill, the carriage automatically returns to the correct position for the first item of the next billing operation.

BACK VIEW OF THE BURROUGHS
PUBLIC UTILITY BILLING MACHINE.



Automatic Motor

*Tally Sheet
Roll*

We now have a definite idea of the appearance of these billing machines. They are arranged in rows in a very large room with a billing operator stationed at each one.

The meter book has now come to Machine 9, which is operated by the billing clerk, Miss Harriet Allen, who places it in her book holder. She has her bills in the bill holder and is ready to print the bill. She turns the pages of her book until she comes to Miss Weickers'. She sees that the last months reading, that is, February 24, 1930 made by Mr. Sweet was 3088 kilowatt hours. Turn to the meter book page for Miss Weickers and see if this is correct. Also turn to the Electric Meter Dials on page ninety-three, and see how Mr. Sweet read the dials and check over the work.

Before Miss Allen starts her work the morning of March 28, she has entered and locked the date. She presses the key marked "Mar" and the date keys "2" and "8" and then presses the lock key in the upper left hand corner of the machine.

Then turning to the Reading column of the meter page she presses down the keys 3-1-6-2 and then enters the previous reading as of February 24, 3-0-8-8 kilowatt hours. Then she presses the space bar which extends along the right hand side of the key board as shown on the cut on page 110. She looks at the kilowatt hours column on the meter page and finds that it is 74. This was

verified by us and the Calculating Division. Then she looks at her chart which stands back of the meter book. Study the illustration on page twenty. This chart is for Residence "B" customers. Without going into a great amount of detail, I have enclosed a rough graph of this chart.

RESIDENCE CHART "B".

<i>Kilowatt Hours by Areas and Amount</i>							
<i>1000 sq. ft.</i>		<i>1100 sq. ft.</i>		<i>1200 sq. ft.</i>		<i>1300 sq. ft.</i>	
<i>Kwh.</i>	<i>Amount</i>	<i>Kwh.</i>	<i>Amount</i>	<i>Kwh.</i>	<i>Amount</i>	<i>Kwh.</i>	<i>Amount</i>
58	\$3.60	58	\$3.67				
74	\$4.40						

By running her eye down the kilowatt hours column, Miss Allen finds 74 and directly across \$4.40 in the 1000 square feet area column. You will remember that Miss Weickers' home was found to be of an area of 1000 square feet and in the Residence "B" Rate. Then the clerk presses the keys B-1-0 (for rate of 1000 sq. ft. area)

	AMOUNT
2 nd DEPRATION	4.40
PREVIOUSLY RENDERED	
TOTAL AMOUNT DUE	

then the keys 7-4 for the kilowatt hours used. Then she presses the space bar for the completion of the second operation.

The third and last operation is to enter the amount, 4-4-0 and press the space bar and the carriage jumps over so that the four parts of the bill are stamped with the amount. The four parts of the bill after Miss Allen has run it through the billing machine is shown. I have marked the three operations she has performed in making out the bill and in order that the above description may be brought out more clearly it is necessary to study this bill of Miss Weickers' for the month of March.

BL.
P.
B.
NO.

COPY

MAR 28, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS.

289-167

—LEDGER—

COPY

MAR 28, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS.

289-167

AMOUNT		DATE	CREDITS	AMOUNT
4.40		Mar 25		4.40
		3rd Operation		
TOTAL AMOUNT DUE		TRANSFERRED TO — FROM		

In order to fix the process of making out the bill in our minds we will look at the meter book page of Miss Weickers' for the last month taken by Mr. Sweet. The meter reads according to his figures 3220 on the meter page enclosed on page one hundred. In order to see how he arrived at this we turn to page ninety-five, which shows just how the meter dials record this reading.

Miss Allen the billing operator first locked the date of the reading, that is, April 24 in the machine that morning so that all the bills to be made out would have the same reading date.

The first operation is to press the keys 3-2-2-0 for the present months reading and then she presses the keys 3-1-6-2 for the previous months reading and then she strikes the space bar and this operation is completed.

The second operation, she looks at our Chart "B" as illustrated on page one hundred fourteen, and in the 1000 square feet column opposite kilowatt hours 58 we find \$3.60. If Miss Allen had looked in the 1100 sq. ft. column our 58 kilowatt hours would have amounted to \$3.67 which would have been wrong. Then we press the keys "B"-1-0 for the rate, and 5-8 for the kilowatt hours and then strike the space bar.

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
GENERAL OFFICES: 39 BOYLSTON STREET

COPY

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2
BOSTON, MASS. 289-167

TE	PRESENT READING	PREVIOUS READING	*RATE	KW-HR.	AMOUNT
24	3220	3162	B10	58	3.60
PREVIOUSLY RENDERED					
TOTAL AMOUNT DUE					

AREA IN 100 SQ. FT.
DEMAND IN KILOWATTS
SEE REVERSE SIDE FOR DETAILS OF RATES

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
39 BOYLSTON STREET

COPY

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2
BOSTON, MASS. 289-167

AMOUNT
3.60
PREVIOUSLY RENDERED
TOTAL AMOUNT DUE

The third and last operation is to enter the amount by pressing the keys 3-6-0 and strike the space bar and the machine enters the amount upon the four parts of the bill automatically.

Miss Weickers' bill for the month of April is shown herewith just as we made it out on the billing machine with the help of Miss Allen, the billing operator.

BL.
P.
B.
NO.

COPY

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

AMOUNT

3.60

DATE

Apr 24

CREDITS

AMOUNT

3.60

TOTAL AMOUNT DUE

TRANSFERRED
TO — FROM

—LEDGER—

COPY

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

In order to appreciate the immense saving in time this chart "B" is to the operator and also to show how the Residence "B" customers bills are figured we will do these two bills out in detail.

Looking at our meter slip we find that 74 kilowatt hours were used in March.

Residence "B" Rate (look on page 10.)

20 kilowatt hours @ 8.5 cents	= 1.70
54 kilowatt hours @ 5 cents	= 2.70
<u>74</u> " "	<u>= 4.40</u>

\$4.40 is the amount of the bill for 74 kilowatt hours of electricity at the "B" rate for a house area of 1000 square feet. This shows that electricity cost the customer, Miss Weickers about 6¢ per kilowatt hour:

$$74 \overline{) 4.40} \begin{array}{r} .059 \\ \hline \end{array}$$

To compare this with a more common commodity we would find that if a dozen of eggs cost us 60¢, one egg would cost 5¢.

Again we look at our meter page for April and we find that 58 kilowatt hours were used.

Residence "B" Rates (look on page 10.)

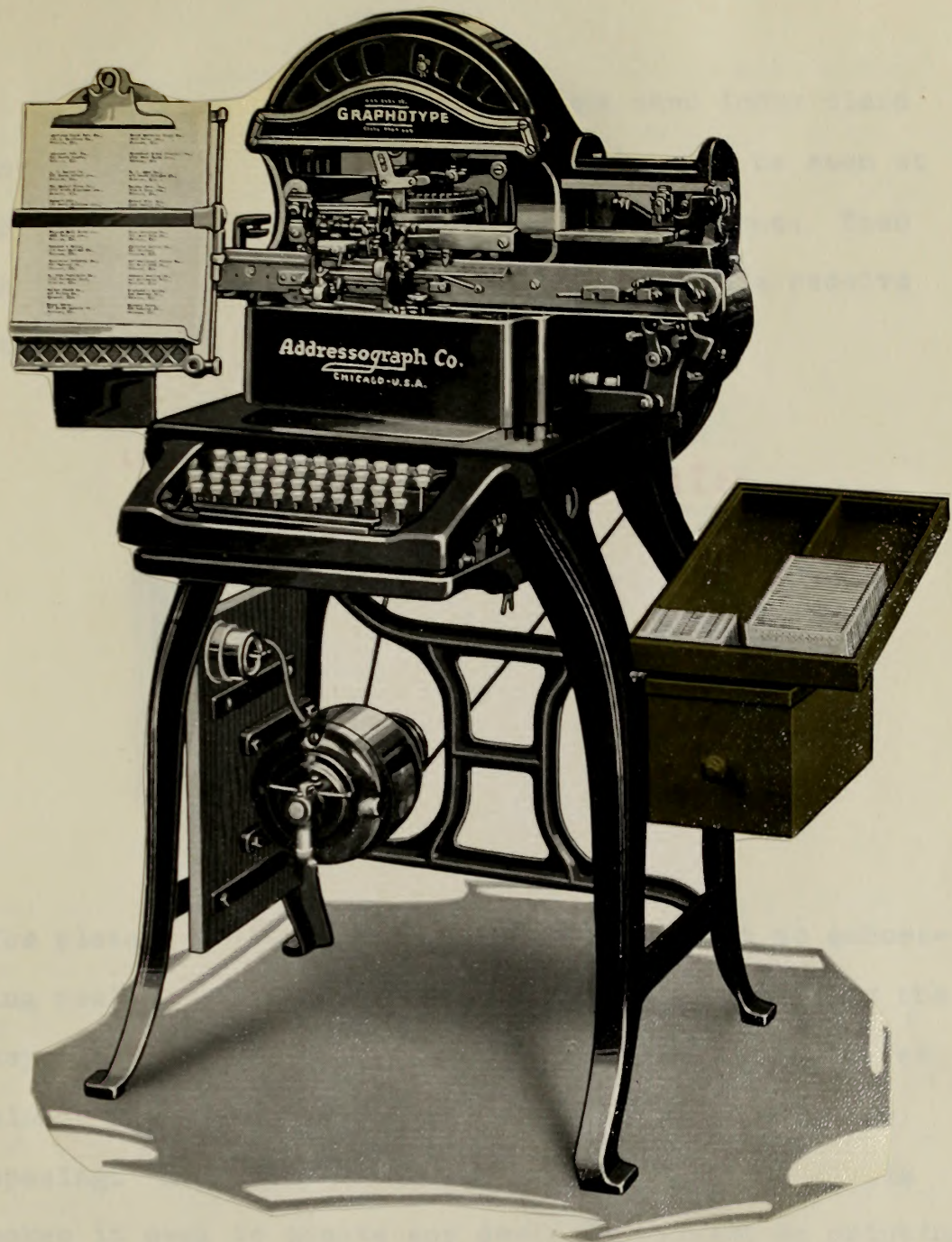
20 kilowatt hours @ 8.5 cents	= 1.70
38 kilowatt hours @ 5 cents	= 1.90
<u>58</u> " "	<u>\$3.60</u>

\$3.60 is the amount of the bill for Miss Weickers for April.

The Addressograph Division

The Graphotype.

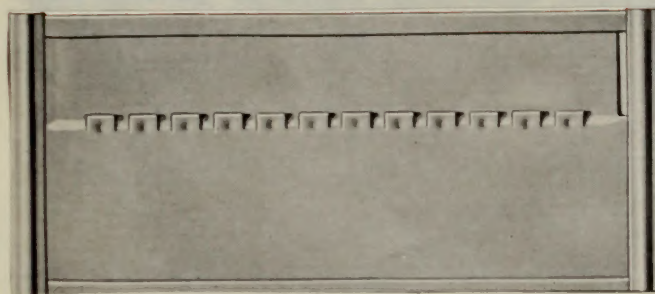
We will next visit the Addressograph Division. Here is where the blank bills are headed by the addressograph machines. First we come to a young lady who is standing at the side of an embossing machine known as a Graphotype. The enclosed illustration gives one a clear conception of what this machine looks like. We notice the holder on the left of the machine with the names and addresses printed thereon. At the front of the machine we observe with surprise a key board exactly as one would find it on a typewriter. Just below this is to be seen the electric motor which evidently furnishes the power for this machine. At the extreme right side of the machine we notice a metal container for the plates which are to be used.



THE GRAPHOTYPE.

The operator places a blank card index plate in the jaws of the plate carriage which may be seen at the top of the illustration on page thirty one. Then she presses a little lever that opens them to receive it.

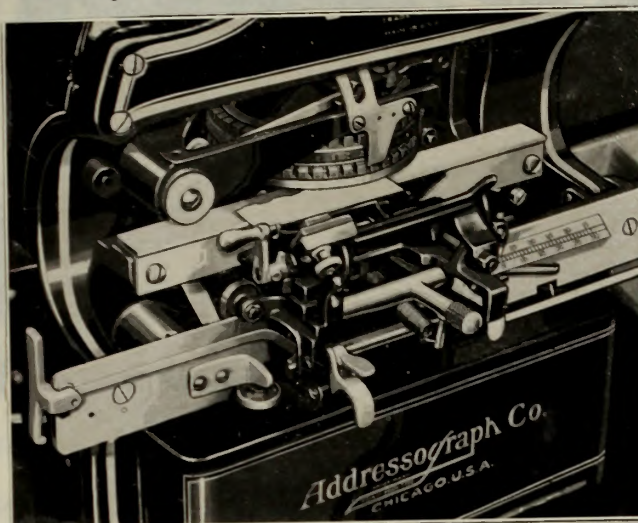
"A" Card Index Plate



Blank Index Card.

The plate carriage is then moved to the left to embossing position just like any typewriter carriage. As the keys are pressed and type embossed, the carriage moves along to the right, automatically, for proper letter spacing. A small pointer moving over character scale makes it easy to locate any desired position on printing plate for embossing. The following cut shows printing plate carriage with a blank printing plate inserted between the jaws, in position to emboss type on it.

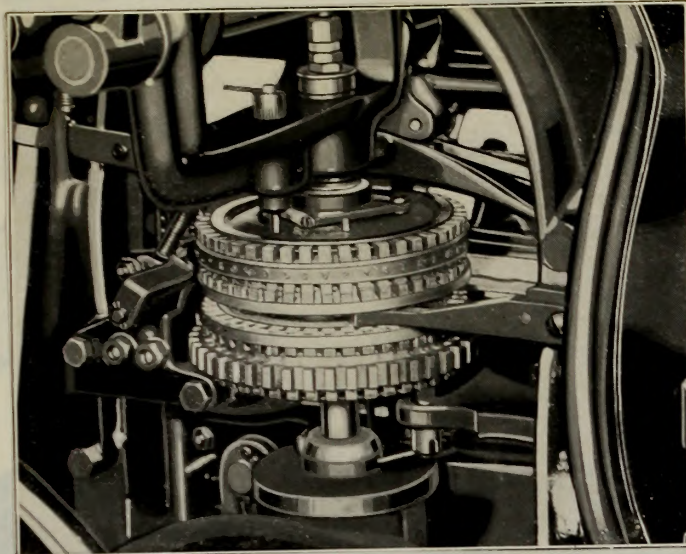
The position of the plate carriage with reference to the rest of the machine may be seen just above the word "Addressograph Co." on the illustration on page one hundred twenty.



The Plate Carriage

When the operator presses a key in order to print on the blank index plate, a punch in turn presses down on one of the forty-four dies and the letter is embossed on the blank plate. The following cut shows the punches and dies for the forty-four different characters which can be embossed with the Keyboard Graphotype. The pressure on the punches and dies is automatically applied by the electric motor which we have noticed on the machine illustrated on page one hundred twenty.

The Revolving Die Head.



We will now return to the young lady operating the Graphotype Machine. She has inserted the blank index card into the plate carriage. The inclosed illustration shows her seated before the machine. Her eyes are on the printed customer's list on the left of the machine and the electric motor is turned on.

The Operator at the
Graphotype Machine.



We also notice in the cut shown on page one hundred twenty-four, that the operator has her hands resting on the keyboard in readiness to start typeing. An illustration of the keyboard on the machine is shown herewith. It is a regular standard typewriter keyboard.



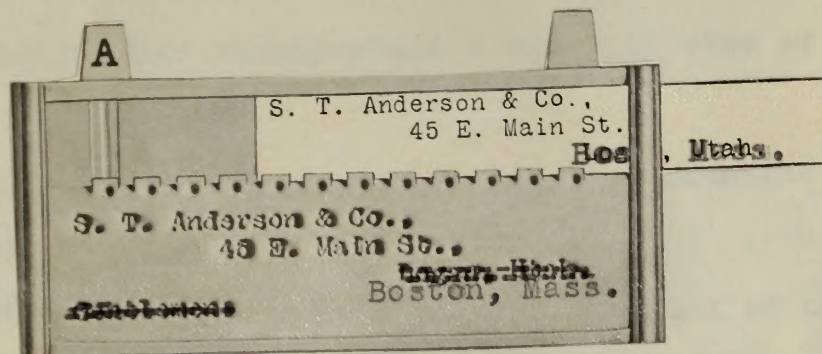
GRAPHOTYPE KEYBOARD.

The young lady comes to the first name and address on her customer's list which is:

S. T. Anderson & Co.,
45 E. Main St.,
Boston, Mass.

She types this on to the index plate and when she has finished it looks like the cut on the following page. We notice that a paper index card is being inserted in to the top part of the metal index plate. This paper

index card is printed from the address plate itself. These paper index cards come in strips which are put through the Addressograph machine and later cut to fit the top of the metal address plate. The purpose of this is to save time in filing and therefore they are known as "Visible Index Cards."



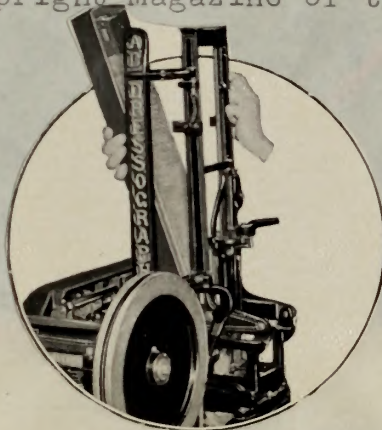
METAL ADDRESS PLATE & PRINTED PAPER INDEX CARD.

After the operator finishes the above address plate she places it in the first compartment of the container at her right and takes a blank plate and inserts it into the machine. She is already to type the next customers plate. These card index plates after being filled out and with the typewritten name and address on paper at the top, are then filed in their proper drawer in the files. They are then ready whenever the addressograph operator requires them.

The Automatic Feed Addressograph

Then we visit the Automatic Feed Addressograph which prints through a ribbon the name of the customer on the blank bills of the company. The enclosed cut shows this ingenious machine with the operator standing at the right side of it, guiding the bills as they pass through. We notice in the lower left hand corner of the cut, page one hundred twenty-eight a close up view of the hopper in which the bills are stacked ready to be automatically fed to printing position by a pneumatic feeding device.

The operator first takes a drawer full of the address plates which we have printed and filed away and places it into the upright magazine of the machine.



Upright Magazine.

Meanwhile she takes the blank bills illustrated on page 129, and stacks them in the feed hopper where a pneumatic suction feed pulls over the top end of a single



THE AUTOMATIC FEED
ADDRESSOGRAPH MACHINE & OPERATOR

THE FEED HOPPER
FOR BLANK BILLS

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
39 BOYLSTON STREET

COPY

COPY

PRESENT READING	PREVIOUS READING	*RATE	KW-HR.	AMOUNT
PREVIOUSLY RENDERED				
TOTAL AMOUNT DUE				

	AMOUNT
PREVIOUSLY RENDERED	
TOTAL AMOUNT DUE	

The Blank Edison Electric Bill

BL.
P.
B.
NO.

COPY

—LEDGER—

COPY

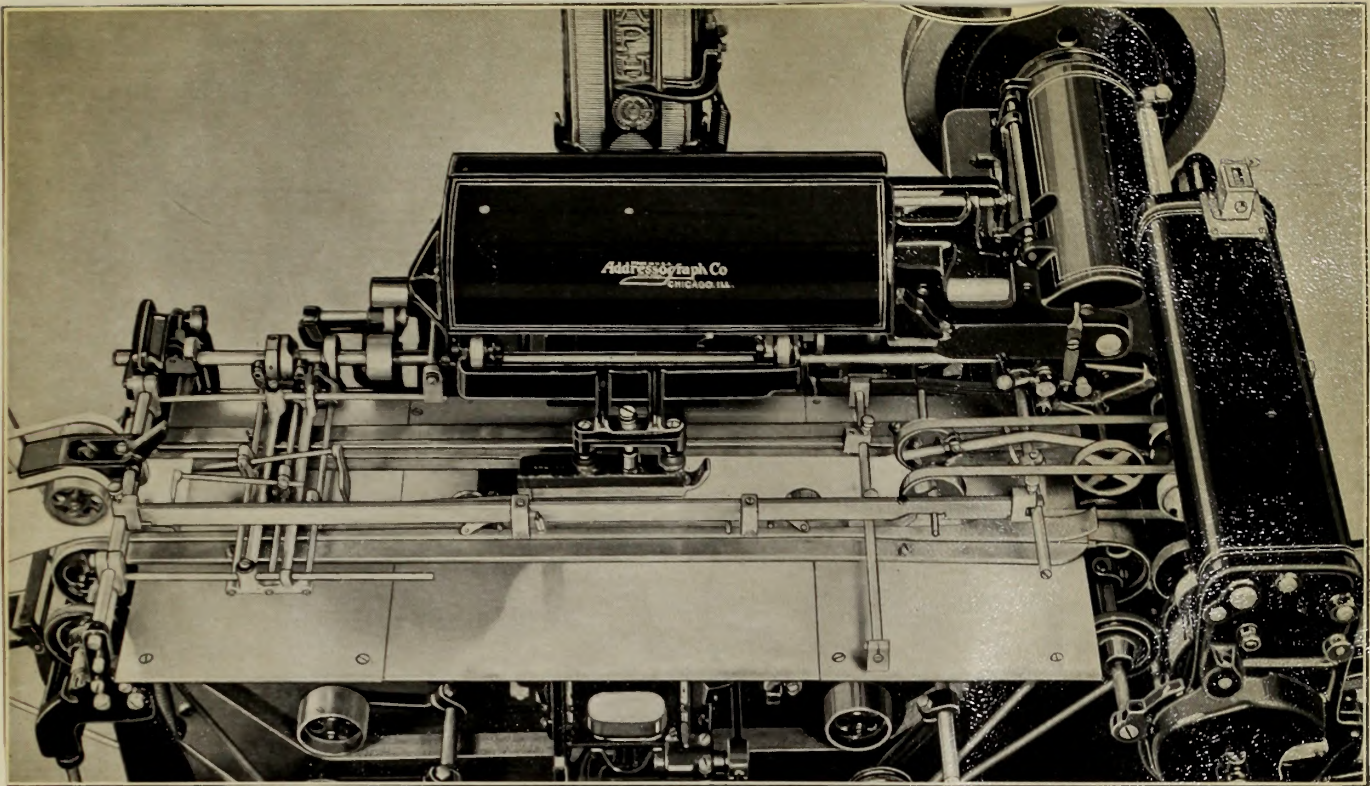
[illegible][illegible]

FORM 41R-1 1/2 M 2-3

form separating it from the others, and swiftly passes it to feed rollers that start it through the machine between carrying belts. The following cut shows the bill passing through the machine between the carrying belts. Also we may see the stamp lever which makes the impression through the ribbon on to the bill. This stamp lever also holds the address plate in position as it comes from the magazine. After each bill is printed, the plate drops down into a receiving magazine beneath. When all the address plates in the magazine have gone through, we take the drawer full beneath and put them back into the file.

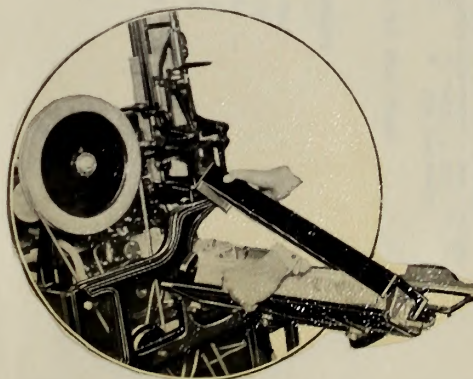
The Top View of the Addressograph

(The forms pass over the flat table from right to left.)



Removing Address Plates.

(After printing address plates pass in their original card index filing order into receiving magazine beneath machine.)



THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
39 BOYLSTON STREET

MRS. GEORGE S. TOWNES
39 BOYLSTON ST.
BOSTON, MASS.
411-44

MRS. GEORGE S. TOWNES
39 BOYLSTON ST.
BOSTON, MASS.
411-44

	AMOUNT
PREVIOUSLY RENDERED	
TOTAL AMOUNT DUE	

The carrying belts move continuously, but the form is held stationery at a printing position by means of stop fingers. When the machine is started the plate marked:

MRS. GEORGE S. TOWNES
39 BOYLSTON ST.
BOSTON, MASS.
411-44

has dropped into printing position, the ribbon runs thru- and the metal plate type presses down at the appointed spot four distinct times as the bill is carried from the right shelf to printing point and out. The addressographed bill is shown here.

BL.
P.
B.
NO.

COPY

MRS. GEORGE S. TOWNES
39 BOYLSTON ST.
BOSTON, MASS.
411-44

AMOUNT

TOTAL AMOUNT DUE

—LEDGER—

COPY

MRS. GEORGE S. TOWNES
39 BOYLSTON ST.
BOSTON, MASS.
411-44

DATE

CREDITS

AMOUNT

TRANSFERRED
TO — FROM

FORM 41R-1½M 2-30

The Addressographed Bill.

The next plate drops into place and is ready for its impression on the next bill as it follows through the machine.

As you stand by the machine with the operator you can hear the four rhythmic beats as each bill is stamped when it passes through. The speed of this marvelous machine is amazing, 7500 impressions can be made per hour. The address plates after printing pass in their original card index filing order into the receiving magazine beneath. The bills are automatically stacked and ready to be sent to the Billing Division. This printing of the name and address is done before the Billing Division receives the bill. There are enough of the index plates for the 350,000 customers of the company. The bills are arranged so that the right districts will be headed up at certain times of the month and thus they go to the Billing Division at the day the meter readers return with their readings in their meter books.

The Return of the Bill to the
Calculating Division.

The bill (see page 117) which we made out with the help of the billing clerk goes from the Billing Division back to the Calculating Division where it is checked for accuracy of the number of kilowatt hours used, correctness of area under "B" rate, and correctness of amount charged for kilowatt hours. The Calculating Division clerks perform the same operations as the billing clerk did in making out the bill. Of course, the clerks do not have to print on the bill the result of their computations and with the help of the charts, they are able to verify the bills very rapidly.

Then they check the Addressographed Bill against the original meter reader's book page. Turn to the illustration of the meter book slip on page one hundred. They check over the bill as to the accuracy of name and proper entry of kilowatt hours as shown by the subtraction of the previous and present reading. When they find it correct, they stamp a "B" or "M" in the amount column of the meter page on the line for that month. This stamp means that the bill is already to go out to the customer. The "B" opposite the kilowatt hours for April 24 on Miss

The Statistical Division

Weickers' meter book slip, means that the bill we made out (see page 117) was found to be correct in every detail by the Calculating Division Office.

The Calculating Division as we have seen has for its duty the verification of the work of the meter readers and also of the billing clerks and in this way they assure the customer that he will be charged only for the amount of electricity he has actually used and at the proper rate. This function is of uttermost importance since it reduces any friction which might arise between the customer and the company. Also it is the foundation of Goodwill for the customer feels confident that his bill has been made out correctly.

Miss Weickers.

Then we look at the first entry in carbon and we find that it shows Miss Weickers' bill for April 27. Her name and address does not appear, merely her account number 222-157. She is the first entry to be made on this for April 24, 1930. The next entry is for another customer who is in the "A" or Commercial rate. On this particular date only thirty-three bills were made on machine

The Statistical Division

If we recall the description given of the Billing Machines, we will remember that as the bills are printed, carbon impressions are made on a recap or tally sheet that feeds around the platen like a sheet of paper in a typewriter. See pages one hundred eleven and twelve. The various totals accumulated in the machine are printed at the bottom of these sheets by the use of a total key. I have enclosed a tally sheet which we will study.

Upon examining the upper portion of the sheet we find that the Billing clerk enters the number of the machine, date, operator, and account or bill number. We notice that it is the machine which Miss Harriet Allen operated when we made out with her help our two bills for Miss Weickers.

Then we look at the first entry in carbon and we find that it shows Miss Weickers' bill for April 27. Her name and address does not appear, merely her account number 289-167. She is the first entry to be made on this for April 24, 1930. The next entry is for another customer who is in the "A" or Commercial rate. On this particular date only thirty-three bills were made on machine

No. 9 by Miss Allen and the totals appear at the bottom under "30" on the right hand margin.

After the Billing clerk operator has printed all of her bills for the day, she sends this Tally Sheet to the Calculating Division where they make a proof of the totals with the bills themselves. For example, we find the total of the kilowatt hours checked because it is the exact difference between the totals of the present and prior columns.

Then the Tally Sheet is sent to the Statistical Division where statistics of amounts of electricity sold and earning are compiled. The statistical clerk first classifies the number of bills on the sheet (the total number of bills couldnot exceed 100) according to rate "A" and "B". Also she finds the number of kilowatt hours and amount under these different rates.

First we will consider all the number of bills, kilowatt hours, and amount under Rate "A". We look at the small chart at the bottom of the sheet which shows the classification under Rates "A" and "B" for the thirty-three bills. The machine list of the bills was checked by "F.B.". The computations were verified by "K.H.".

The Tally Sheet.

(To study open both ends of the sheet.)

Kw.-Hr. @ 8½¢ ADD ½¢ FOR EACH ODD ITEM	Kw.-Hr. @ 8¢ ADD 50¢ FOR EACH BILL	Kw.-Hr. @ 7½¢ ADD ½¢ FOR EACH ODD ITEM ADD \$3.00 FOR EACH BILL	Kw.-Hr. @ 5½¢ ADD ½¢ FOR EACH ODD ITEM ADD \$43.00 FOR EACH BILL	Kw.-Hr. @ 3½¢ ADD ½¢ FOR EACH ODD ITEM ADD \$233.00 FOR EACH BILL
437 8.5 <u>2185</u> 3496 37.145 .025 <u>37</u>	1801 .08 <u>144.08</u> 3.- <u>147.08</u> .22 <u>146.86</u>	2168 .075 <u>10840</u> 15176 <u>162.600</u> .01 <u>162.61</u> 6.61 <u>168.61</u>		

	NO. OF BILLS	Kw.-Hr.	@	AMOUNT
RATE "A"	11	437	8½¢	37 17
	6	1801	8¢	146 86
	2	2168	7½¢	168 61
			5½¢	
			3½¢	
TOTAL "A"	19	4406		352 64

	Kw.-Hr.	AMOUNT
BILLING MACHINE	4867	383 55
SUBTRACT "A"	4406	352 64
BALANCE "B"	461	30 91

COPY

TALLY SHEET
BILLING DEPARTMENT
ELECTRIC REVENUE—MACHINE BILLING

MACHINE NO. 9 OPERATOR H. Allen
 DATE 4/24/30 FINISHED
 BOOK NO. 25-11 ACCT. NO. 289-167 TO 322-960-2

LOAD
DATE

DATE PRESENT READING	METER READINGS		RATE	AREA IN 100 SQ. FT.	KW. HOURS	AMOUNT
	PRESENT	PRIOR				
Apr 24	3220	3162	B	10	58	3.60
Apr 24	1120	722	A		398	32.34

Totals: Apr. 24

78036	73169	4867	383.55
73169			
4867			

RATE	NO. OF BILLS	KW-HR.	AMOUNT	
A	19	4406	352	64
B	14	461	30	91
TOTAL	32	4867	383	55

MACHINE
LIST

F.B.

VERIFIED

R.N.

The bills under rate "A".

RATE	No. of Bills	Kw. hr	AMOUNT
A	19	4406	\$ 352.64

Upon the opposite side of the Tally Sheet we find that a clerk in the Statistical Division has divided the **nineteen** bills in the following manner in the chart marked Rate "A".

	No. of Bills	Kw. hr.	@	AMOUNT
RATE "A"	11	437	8 1/2¢	37.17
	6	1801	8¢	146.86
	2	2168	7 1/2¢	168.61
TOTAL "A"	19			

Eleven of the bills in rate "A", only used enough kilowatt hours of electricity to be charged the first step rate of $8\frac{1}{2}\text{¢}$ per kilowatt hour.

Six of the bills used enough kilowatt hours of electricity to be in the second step rate of 8¢ per kilowatt hour.

Two of the bills used enough kilowatt hours of electricity to be in the third step rate of $7\frac{1}{2}\text{¢}$ per kilo-

watt hour.

The total number of bills being 19, kilowatt hours 4406, and the amount \$352.64.

I am going to show how we arrived at the amounts which these various bills equaled at the different step rates.

Step 1. 437 kilowatt hours @ $8\frac{1}{2}\text{¢}$ = \$37.17

437
.085
<hr/> 2185
3496
<hr/> 37145
.025
<hr/> 37.170

There were 11 bills which makes 6 even and 5 odd bills which they charge $\frac{1}{2}\text{¢}$ for.

Step 2. 1801 kilowatt hours @ 8¢ = \$146.86

1801
.08
<hr/> 144.08
3.00
<hr/> 147.08
-.22
<hr/> 146.86

They charge 50¢ for each bill and there were 6 in all. There were 11 bills under Step 1 but in Step 2, there were a great deal more and those running for two months are prorated by subtracting 22¢ .

Step 3. 2168 kilowatt hours @ $7\frac{1}{2}\text{¢}$ = \$168.61

2168
.075
<hr/> 10840
15176
<hr/> 162.600
.01
<hr/> 162.61
6.00
<hr/> 168.61

They charge $\frac{1}{2}\text{¢}$ for each odd bill and there were 2. Also they add \$3.00 for each bill in this step and there were 2 in all.

The charge for each one of these steps may be seen at the chart at the top part of the back of the Tally Sheet.

In order to arrive at the kilowatt hours and amounts under the "B" rate and to check the work of the Calculating Division, we see another chart which takes the totals of the Billing Machine and subtracts those under the "A" rate. The balance is the amount under the "B" rate.

Then we turn to the machines which have replaced manual labor in the gathering of very accurate and detailed information. The full equipment needed for the compilation of statistical information consists of a punching machine, a sorting machine, and a tabulating machine. The tabulating and sorting machines are operated and controlled by a punched card on which the data to be tabulated is perforated.

These machines are so flexible that they will electrically compile, distribute, or analyze any kind of information possible to be represented by figures or code symbols.

The tabulating card which can be arranged to suit the needs of any business is the basis for the operation of the machine. The desired facts of analysis

which have been transposed into numerical code or symbols are first punched on a tabulating card each hole represents one of ten digits. The work of punching is rapidly performed by an experienced operator. It permits of positive verification before the card is used in compiling information.

After the cards are once punched the task of gathering the information is entirely automatic and reports of a statistical nature can be obtained by merely putting a bunch of cards through the sorter and tabulator. Little clerical work is required and the process of sorting and tabulating is merely a matter of a few hours just prior to the need for such analytical details.

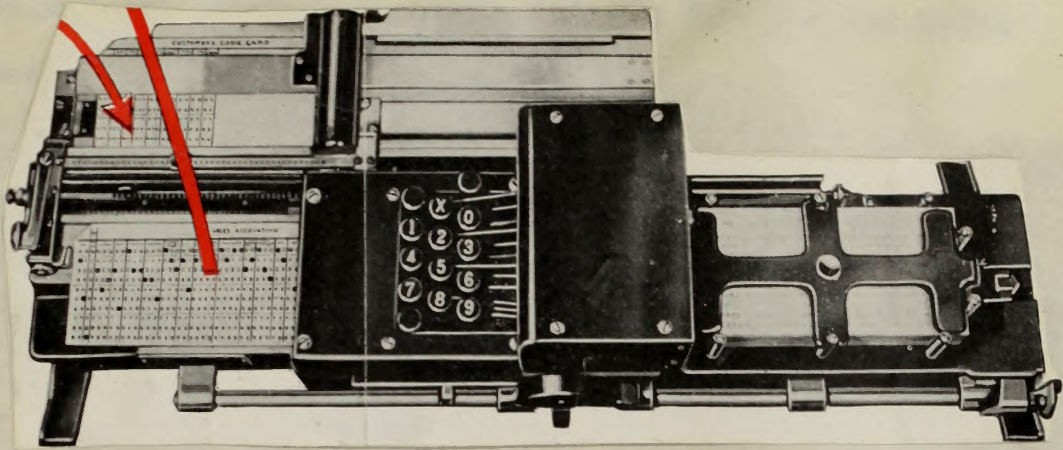
The essential point to be observed in arranging such columns is to have the various items to be punched in an order that is progressive from top to bottom of the memorandum from which the data is to be punched.

We will now make a study of how these machines are used to apply in the Statistical Division of the Edison Electric Illuminating Company of Boston.

We will first watch the operator of the punching machine who takes a blank card and places it into the machine.

The Electric Key Punching Machine.

(The carriage is thrown open to show the card punched.)



The operator desires to punch a card to show the information on our Tally Sheet regarding Rate "B". Upon looking at our Tally Sheet on page one hundred thirty-seven, we find that under Rate "B" there are;

14 Bills	April 24, 1930.
461 Kilowatt hours	Rate "B" 17
\$30. 91 Amount	

First she presses the key "4" for the month at the top of the card. Then she presses the keys "2" and "4" for the day of the month. Then in order to get to the Number of Bills column she presses the blank key shown above to skip the District, Ledger, Customer, Present Meter Reading, and the Blank column.

Then strikes the keys 3-0-9-1 for the amount of the bills.

The final step is to enter the number 17.

Then when she comes to the "Number of Bills" column she strikes the keys "1" and "4" and the holes are punched on the card inclosed.

[illegible]

RESIDENCE "B" RATE OF TALLY CARD.

Then the operator makes a blank punch to move the card to the second division of the next column which is the "K.W. Hours" column. Then she strikes the keys 4-6-1.

The operator makes a blank punch to move the card over the first division of the "Amount" column and then strikes the keys 3-0-9-1 for the amount of the bills.

The final step is to enter the number classif-

ication for that rate. Rate "B" residence is always number 17 and General Rate "A" is always number 12. The extra punch of the zero in the Rate column does not mean anything as far as the number of the Rate is concerned. The card is then placed in Residence "B" File.

Every month the Statistical Division makes out a Comparative Analysis of Electric Revenues for that particular month. The operator would take from the files the punched cards for the month of April which are classified on this sheet and place them in the hopper or stacker and the cards would travel over the surface plate at the top of the sorting machine and drop into their proper groups "A" to "N". The card illustrated would drop into group "B" cards. On page one hundred forty-five I have enclosed the form used to find the Comparative Analysis of Electric Revenues for the month.

COMPARATIVE ANALYSIS OF ELECTRIC REVENUES.

FORM 306A 150-12-29

COPY

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON

COMPARATIVE ANALYSIS OF ELECTRIC REVENUES

MONTH OF April 1930

CLASSIFICATION	NUMBER OF BILLS		KILOWATT DEMAND		KILOWATT-HOURS SOLD		ELECTRIC REVENUES		REVENUE PER KW-HR.	
	CURRENT YEAR	PREVIOUS YEAR	CURRENT YEAR	PREVIOUS YEAR	CURRENT YEAR	PREVIOUS YEAR	CURRENT YEAR	PREVIOUS YEAR	CURRENT YEAR	PREVIOUS YEAR
12 GENERAL RATE A	<u>4/24/30</u> <u>14</u>	—	—	—	<u>4/24/30</u> <u>461</u>	—	<u>4/24/30</u> <u>\$ 30.91</u>	—	—	—
17 RESIDENCE RATE B										
21 YEARLY LIGHTING RATE C										
GENERAL WHOLESALE RATE D LOW TENSION										
32 COMMERCIAL										
34 RAILROADS & RAILWAYS										
HIGH TENSION										
36 COMMERCIAL										
39 OTHER ELECTRIC UTILITIES										
TOTAL HIGH TENSION										
TOTAL RATE D										
STREET LIGHTING RATE E										
41 MUNICIPAL INCANDESCENT										
42 " ARC										
43 COMMERCIAL										
45 OTHER ELECTRIC UTILITIES										
TOTAL RATE E										
GENERAL POWER RATE F										
51 SHORT USE, *ESTABLISHED DEMAND										
52 " " *INDICATOR "										
53 LONG USE, ESTABLISHED "										
54 " " INDICATOR "										
TOTAL RATE F										
WHOLESALE POWER RATE G										
61 TOTAL LOW TENSION										
HIGH TENSION										
66 COMMERCIAL										
68 RAILROADS & RAILWAYS										
TOTAL HIGH TENSION										
TOTAL RATE G										
MISCELLANEOUS ENERGY RATE H										
73 TOTAL LOW TENSION										
78 TOTAL HIGH TENSION										
TOTAL RATE H										
79 WHOLESALE COOKING RATE K										
COOPERATIVE WHOLESALE RATE N										
81 COMMERCIAL										
82 OTHER ELECTRIC UTILITIES										
TOTAL RATE N										
SUPPLEMENTARY SERVICE RATE S										
91 DIRECT CURRENT										
92 ALTERNATING CURRENT										
TOTAL RATE S										
99 INTERCHANGE										
ALL RATES										
LOW TENSION										
HIGH TENSION										
TOTAL										

FARMS

*NO CURRENT BILLED ON SECOND BLOCK OF RATE

ELECTRICITY FOR "COMPANY USE."

(at locations outside of Generating or Sub-Stations)

NOT BILLED
METER ALIVE.....ITEMS
.....KW.-HR.

Clause # 1	Signs—Pay Stations and Clock
" # 2	Signs on Company's Property
" # 3	General Lighting and Power
" # 4	Free Electric Current
" # 5	Appliance Dept.
" # 6	Steam Heating Dept.
" # 7	Community and Electric Shows
" # 8	Broadcasting Dept.

Total,

Month	To Date
.....kw. hrs.kw. hrs.
"	"
"	"
"	"
"	"
"	"
"	"
"	"
.....kw. hrs.kw. hrs.

CORRECT.....
SUPT. BILLING DEPT.

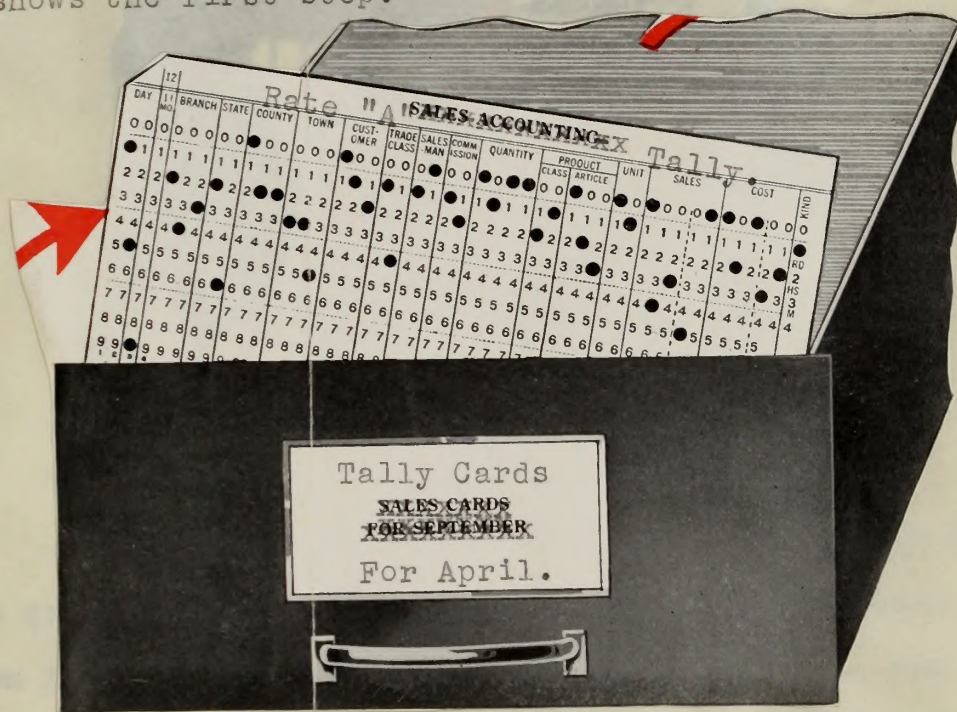
APPROVED.....

AUDITOR

MONTH OF.....

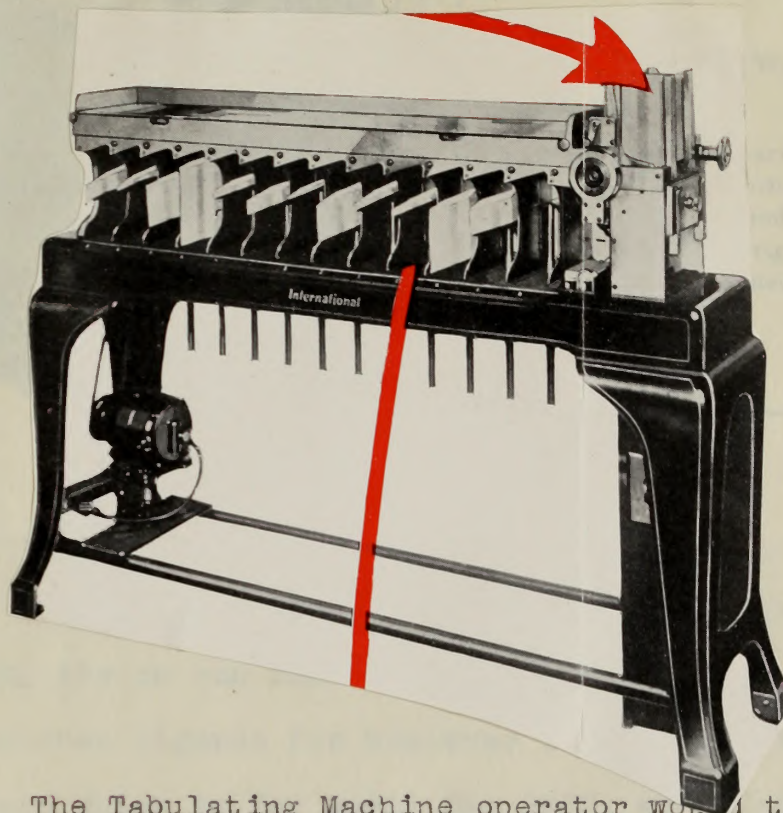
The Path of the "B" Punched Card.

We will take the original card we punched (see page 143) which was for April 24, 1930 and included fourteen bills under Residence "B" Rate. This card is taken with all the other rate cards showing the Tally for the month of April from the appropriate file. The enclosed cut shows the first step.

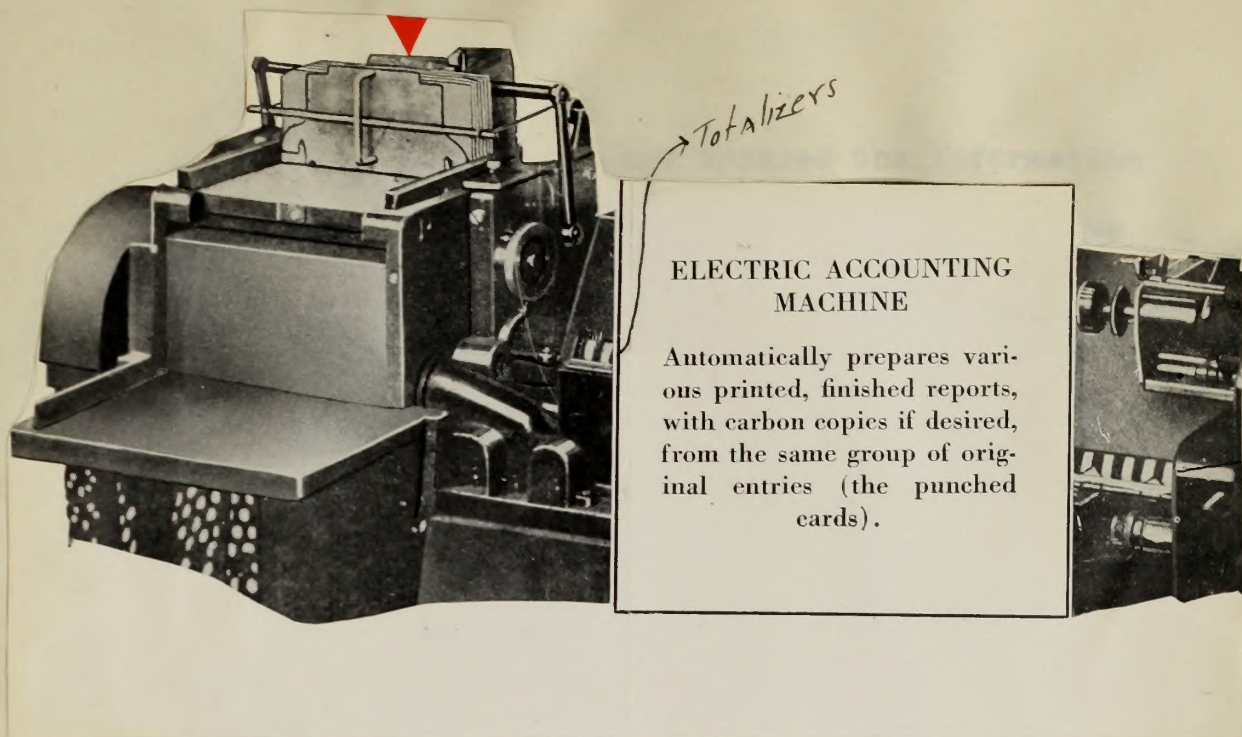


Then all of the cards for the month of April are placed in the hopper at the right of the Sorting Machine. The arrow points to where the cards are stacked before the machine is started. The enclosed illustration also shows the cards which have dropped into their particular group after they have traveled over the top of the Sorting Machine.

Our particular card is probably in the second group from the right of the machine.



The Tabulating Machine operator would take all the group "B" cards for the month of April and place them in the stacker or hopper in the Tabulator. The following cut shows by the arrow where the cards are placed on the Tabulating Machine.



As the cards run through the machine, the totalizers which are on the face of the machine, would record the accumulated figures for whatever information we seek. Our "B" card which is for April 24, 1930, would add 14 bills to the total for April when it went through the machine. We would put the total of the number of bills in the first column of the Analysis Sheet on page 145. Our "B" card would add 461 kilowatt hours to the total of the amount entered into the "C" column of the Analysis Sheet. Our "B" card would add \$30.91 to the total of this particular group which is entered into the "D" column for Electric Revenues.

After the operator had entered the information shown by the totalizers for all the cards in the Group "B" Rate for April, she would take from the sorting machine all the cards in group "A" and place them in the Hopper of the Tabulating Machine. They would then be ready to run through the machine in order to get the information to be entered on the Analysis Sheet. After the cards have gone through the machine they are placed in order back into their appropriate file drawer.

The Bill at the Bookkeeping Division

We have seen how Miss Weickers' bill of April 27, 1930 was checked for accuracy by the Calculating Division and how the information it contained was submitted to the Statistical Division for its use in the preparation of the monthly reports.

Now, however, the bill is sent to the Bookkeeping Division of the Accounting Department where any charges for appliances purchased by Miss Weickers may be entered on the bill. Miss Weickers it seems did not purchase any electric appliances from the Company and of course she will not be charged for any.

In order to understand what happens to the bill in the Bookkeeping Division it will be necessary for us to study the four perforated parts of an Edison Electric Illuminating Company bill. We will use Miss Weickers' bill as of April 27, 1930 (see page 117).

Part "A". This is Miss Weickers' receipt which she keeps to show that she has paid the amount due. It contains the date of reading, present and prior readings, rate, area, kilowatt hours used, and the amount.

Customer's Receipt.

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
GENERAL OFFICES: 39 BOYLSTON STREET

PART "A"

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

PRESENT DATE	PRESENT READING	PREVIOUS READING	*RATE	KW-HR.	AMOUNT
Apr 24	3220	3162	B10	58	3.60
				
				
* RATE B AREA IN 100 SQ. FT. RATE F DEMAND IN KILOWATTS SEE OTHER SIDE FOR DETAILS OF RATES					PREVIOUSLY RENDERED
					TOTAL AMOUNT DUE

• RATE B AREA IN 100 SQ. FT.
RATE F DEMAND IN KILOWATTS
SEE OTHER SIDE FOR DETAILS OF RATES

PREVIOUSLY RENDERED

TOTAL AMOUNT DUE

Part "B". This is the remittance coupon of Miss Weickers' bill which is detached at the time she presents the bill for payment. It is the Company's record of the payment of the bill by the customer.

Remittance Coupon.

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
39 BOYLSTON STREET

PART "A"

COPY

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

AMOUNT

3.60

PREVIOUSLY RENDERED

TOTAL AMOUNT DUE

While the bill is at the Bookkeeping Division Parts "A" and "B" together are detached from the remainder of the bill and are sent to the Mailing Division where the bill is folded and inserted into an open face envelope which allows the name and address only to be read by the Post Office.

Then the envelope containing the bill goes to the Metered Mail Machine which stamps the Official U. S. Imprint and the time of mailing. The number of impressions made by the metered mail machine is paid for at the local Post Office at the rate of 2¢ each.

A truck from the Mailing Division takes the bill to the Post Office. Later, of course, the envelope is delivered to the customer's home.

The Bill at the Customer's Home.

In five days return to
THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
39 Boylston St., Boston, Mass.

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

Meanwhile, the remainder of the bill is at the Bookkeeping Division and the Collector's Coupon or Part "C" is detached and sent to the pay station. This pay station is Pulsifar Hardware Store, 317 Harvard Avenue, Allston. Miss Weickers' home is located in the Allston district of Boston. The collector at this pay station receives 2¢ per coupon and is the sole agency for this particular district.

Collector's Coupon.

BL.	PART "C" COPY	Apr. 27, 1930					
P.							
B.							
NO.							
MISS NELLIE WEICKERS 49 STOUGHTON ST. SUITE 2, BOSTON, MASS. 289-167							
<table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>							AMOUNT
		3.60					
TOTAL AMOUNT DUE							

When the customer calls at the pay station to pay her bill, the collector takes this coupon and compares it with her bill and upon receipt of her money he detaches the remittance coupon and stamps her receipt. Then he takes the remittance coupons he has received for the month and makes out a check for all the cash received. The check and the remittance coupons are sent to the Boston Office. The collector retains Part "C" until he receives his money from the Company for all his collections for the month.

The last section of the bill or Part "D" is the ledger record coupon which has an important part of the work of the Accounting Department.

Ledger Coupon.

—LEDGER—

COPY PART "D" Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

DATE	CREDITS	AMOUNT
Apr 24		3.60

TRANSFERRED
TO — FROM

FORM 41R-1½M 2-30

The Edison Electric Illuminating Company of Boston uses the Stub Plan of Keeping Customer's Accounts. In order to understand this plan it is first necessary to refer to the usual ledger method of keeping customer's accounts. At the time the bill was made out, Miss Weickers' account would be charged for the amount of electricity sold to her for the month. This would amount to \$3.60 and would be posted as a debit to her account from the Sales Book of the Company. When Miss Weickers paid this

bill on May 9, 1930, a credit posting would be made from the Cash Book to her account and the account would be closed for the month. The tremendous amount of work necessary to go through this procedure for 350,000 customers can hardly be imagined unless one has had an opportunity to take part in it. At the end of the month all these accounts had to be added and balanced and the totals must agree with the amount shown on the Company's Trial Balance for the Customer's Accounts.

Under the new plan, stubs and trays are used instead of ledgers to keep a record of the customer's accounts. For example, on April 28, 1930 the clerk in the Accounting Department would take Miss Weickers' ledger coupon or stub and place it in the UNPAID TRAY marked "289". The trays are marked with numbers because the 350,000 customer's accounts are divided into about 325 trays with approximately 1000 accounts or stubs in each tray. If we look at the bill of Miss Weickers we see below the address on the receipt coupon and the ledger coupon "289-167", the "289" is the tray in which the ledger coupon is placed. The "167" means that her home is on the first or "1" street in the district "289" and "67" is the approximate number of her house on that street. To be exactly correct since her house number is "49" it should be

"289-149", but of course, it is impossible to have the street and house numbers absolutely correct for each customer.

On May 9, 1930 when Miss Weickers paid her bill, the clerk in the Accounting Department would be notified by the receipt of the remittance coupon which showed that the cash was received and she would take the ledger coupon of Miss Weickers from the UNPAID TRAY "289" and place the coupon in the PAID TRAY "289" and in this way Miss Weicker's account would be closed for the month. No pen and ink entry had to be made nor was any posting necessary. The diagram enclosed shows the ledger account of Miss Weickers with the debit and credit entries and also how the placing of the ledger coupon in the UNPAID TRAY and the PAID TRAY has the same effect as far as the customer's account is concerned.

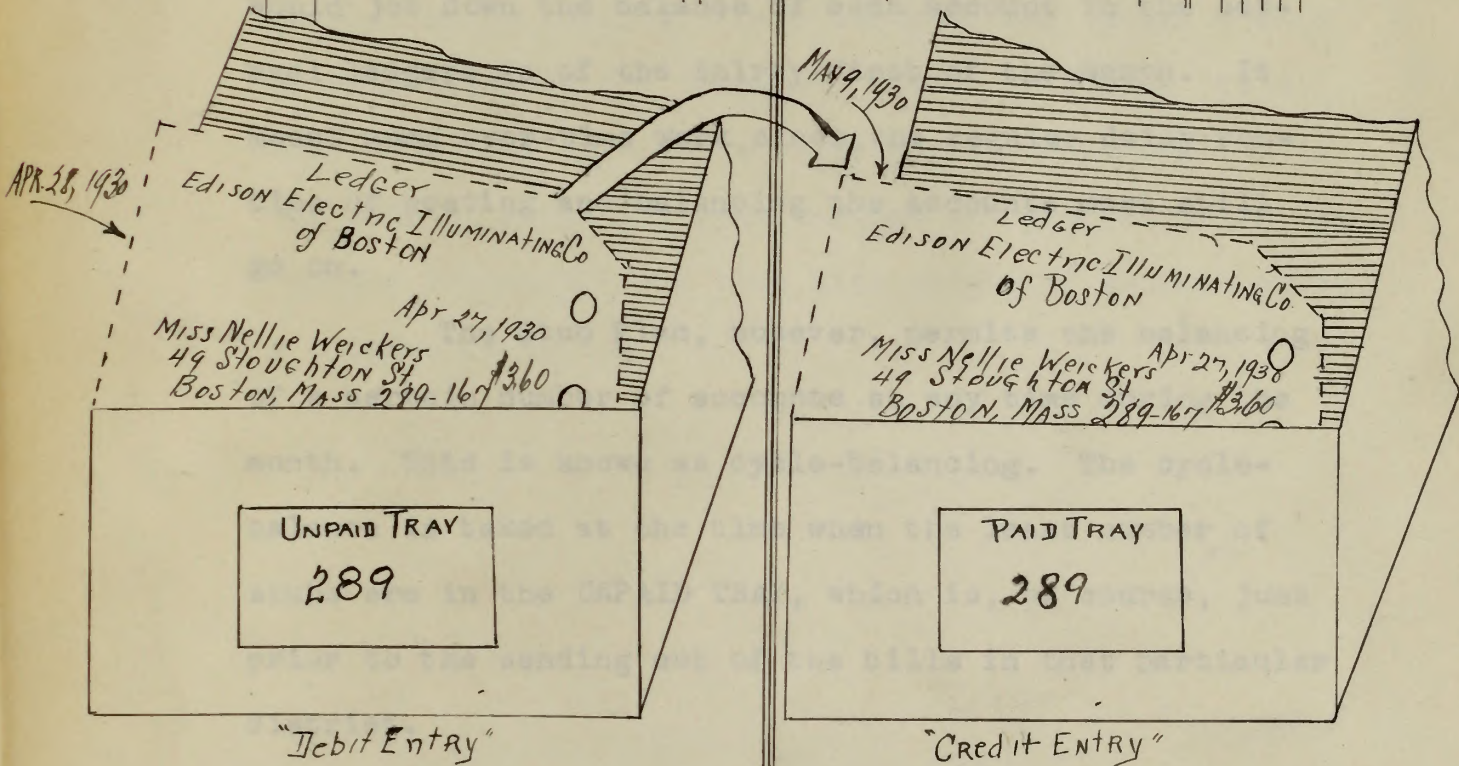
Customer's Ledger Account

Miss Nellie Weickers

49 Stoughton St

Boston, Mass.

1930	Debit	F.			1930	Credit	F.		
Mar 28		\$ 159			Apr 9		C 301		446
Apr 27		\$ 212			May 9		C 105		360



The Stub Plan of Keeping Customer's Accounts.

Under this new plan the matter of taking a trial balance of the customer's accounts is greatly simplified. In the old ledger method, the trial balance of all the customer's accounts was taken at the end of the month. That means that the bookkeepers would jot down the balance of each account in the several ledgers as of the thirty-first of the month. It meant much over-time work since the regular daily routine of posting and balancing the accounts must still go on.

The Stub Plan, however, permits the balancing of a certain number of accounts at any time during the month. This is known as cycle-balancing. The cycle-balance is taken at the time when the least number of stubs are in the UNPAID TRAY, which is, of course, just prior to the sending out of the bills in that particular district.

For example, on April 25, 1930 there are the least number of bills or ledger coupons in the "Unpaid Tray--289" and on this day the bookkeeper would list the amounts of all the ledger coupons remaining in the "Unpaid Tray--289" and this would be the cycle-balance of the customers in this particular district.

The Payment of the Bill.

When the bookkeeper was jotting down the amounts of the ledger coupons in the tray we know she would not find Miss Weickers', because she paid her March bill of \$4.40 on April 9, 1930. See diagram on page sixty-eight. Therefore, on April 9, the clerk took the ledger coupon of Miss Weickers for \$3.60 and placed it in the "Paid-Tray--289" and this closed Miss Weickers' account until the bill of April 27, came through and was placed in the "Unpaid Tray--289" and then Miss Weickers' account showed a balance of \$3.60.

Miss Weickers went to the first floor and went directly to the Receiving Tellers window to pay her bill. The first floor of the Edison Electric Company of Boston looks very much like a bank with the Receiving Tellers window, the information desk, and the adjustment of customer's accounts office.

Miss Weickers handed Mr. John Dale, Receiving Teller, her bill with a check for the amount due. The check which is on the Brookline Trust Co. is enclosed.

The Payment of the Bill.

We recall that in the previous section the first two parts of the bill, the customer's receipt and the remittance coupon, were mailed to the home of Miss Weickers. Miss Weickers on the morning of May 9, 1930 called at the General Offices of the Edison Electric Illuminating Co. of Boston, at 39 Boylston Street. Her regular collector is the Pulsifar Hardware Store because she is in the Allston district of Boston. But she was in the city and decided to pay her bill at the main office.

She stopped on the first floor and went directly to the Receiving Tellers window to pay her bill. The first floor of the Edison Electric Company of Boston looks very much like a bank with the Receiving Tellers windows, the information desk, and the adjustment of customer's accounts office.

Miss Weickers handed Mr. John Dole, Receiving Teller, her bill with a check for the amount due. The check which is on the Brookline Trust Co, is enclosed.

Miss Weickers' Check.

BROOKLINE, MASS. *May 9* 19 *30* No. *567*

BROOKLINE TRUST CO. 53-242

PAY TO THE ORDER OF *Edison Electric Ill. Company* \$ *3*^{*60*}/_{*100*}

Three and ^{*60*}/_{*100*} **DOLLARS**

Nellie Weickers

DENNISON & SONS-LITHO-NEW YORK-BOSTON

Blank Indorsement on Back of Check.

Nellie Weickers

Upon receiving the check from Miss Weickers, Mr. Dole, the Receiving Teller, took the bill and had both parts stamped. He tore off the first part, or the customer's receipt and handed it back to Miss Weickers. We notice on the receipted bill enclosed, that it is marked paid, with the date and the company's initials.

Customer's Stamped Receipt.

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON
GENERAL OFFICES: 39 BOYLSTON STREET

COPY

Apr. 27, 1930

MISS NELLIE WEICKERS
49 STOUGHTON ST. SUITE 2,
BOSTON, MASS. 289-167

PRESENT DATE	PRESENT READING	PREVIOUS READING	*RATE	KW-HR.	AMOUNT
Apr 24	3220	3162	B10	58	3.60

* RATE B AREA IN 100 SQ. FT.
RATE F DEMAND IN KILOWATTS
SEE OTHER SIDE FOR DETAILS OF RATES

PREVIOUSLY RENDERED

TOTAL AMOUNT DUE

Miss Weickers has now paid her bill for the month of April and the transaction is completed as far as it concerns her.

Mr. Dole, the Receiving Teller, takes the check and places it in his cash drawer. The remittance coupon which he tore off the bill after it was stamped he placed with the other coupons he received for the day. The stamped remittance coupon is enclosed.

Stamped Remittance Coupon.

THE EDISON ELECTRIC ILLUMINATING COMPANY OF BOSTON 39 BOYLSTON STREET	
COPY	
Apr. 27, 1930	
MISS NELLIE WEICKERS 49 STOUGHTON ST. SUITE 2, BOSTON, MASS. 289-167	
PREVIOUSLY RENDERED	AMOUNT 3.60
TOTAL AMOUNT DUE	

Mr. Dole, the Receiving Teller, at two o'clock of the afternoon of May 9, 1930 will take a total of all the cash he has received for the day. He then will make out a Daily Report of Cash Collections showing the Bills, Specie, and Checks which make up this total. He sends this Report with the cash and the remittance coupons to the Cashier's Department. The form of Daily Report of Cash Collections with the total amount received by Mr. Dole is enclosed.

We notice that Miss Weickers' check on the Brookline Trust Co., for \$3.60 is at the top of the list on the Report. When Mr. Dole makes out the Report he also makes out the following form to show the number of stubs which go to make up the total of his Cash Collection Report. This form also shows the time, date, and amount of actual cash he has received. This amount of course is taken from the Daily Report total.

Teller's Report.

Teller *John Dole*
 Stubs *317*
 Time *2:45*
 Date *5/9/30*
 Amount *\$634.00 - Actual Cash Recd*

The EEI Co. of B. Form X320

The remittance coupons or stubs and the cash with the two reports then go to the Cashier in the Cashier's Department. The Cashier than sorts the stubs into the account or district number order corresponding to the trays in the Accounting Department. For example, the stamped remittance coupon on page one sixty-four would be placed in the "289" coupon group. Then a total of these

stubs is listed on the Burroughs Adding Machine and the Cashier sees if this total of the stubs agrees with the total of the cash collection report. The amount of the stubs should be \$634.00 to agree with the amount of the cash \$634.00. If it did not agree, the Receiving Teller must go to the Cashier's Department and check over the stubs and the cash until he discovers the error.

The adding machine list of the stubs and the stubs or remittance coupons are sent to the Accounting Department. The clerk in the Accounting Department takes the stubs and goes to the trays and matches the remittance coupons against the ledger coupons in the unpaid tray. If it agrees he removes the unpaid ledger stub and places it into the paid tray.

To take a specific case we will see what happens in regard to Miss Weickers' account. The clerk in the Accounting Department when she received the stamped remittance coupon of Miss Weickers, see page 164, went to the UNPAID TRAY--289. In order to understand this perfectly study the diagram on page 158. She compared the remittance coupon with the ledger coupon see page one hundred fifty-five, and finding that they agreed, she took the ledger coupon of Miss Weickers and placed in in the

PAID TRAY--289. This completed the credit entry and Miss Weickers' account is closed for the month.

The stamped remittance coupons and the ledger coupons from the PAID TRAYS are held on file for some time and later they are taken down to the vault on the third floor and held on record in case any question might arise about the payment of an account.

The next morning, May 10, 1930, a truck from the Old Colony Trust Company calls at the Edison Building and Miss Weickers' Check (see page one hundred sixty-two) along with all the cash received the preceding day is sent to the Bank to be deposited to the account of the Edison Electric Illuminating Co. of Boston.

This is a comprehensive summary of the entire procedure from the time the meter reader calls at the customer's home till the money in payment of the bill is deposited at the bank.

Suggested Time to be Devoted in Class to this Unit.

First Day.

The Meter Reader's Visit.

The Meter Reader's Book at the Calculating Division.

The Billing Department.

Second Day.

The Addressograph Division.

a. The Graphotype

b. The Automatic Feed Addressograph

Third Day.

The Return of the Bill to the Calculating Division.

The Statistical Division.

Fourth Day.

The Bill at the Bookkeeping Division

Fifth Day.

The Payment of the Bill.

Note: The above schedule is assuming that full time is devoted to the Appreciation Unit. If, however, the Unit is given in conjunction with the regular Bookkeeping Course, the teacher may allow three or four weeks for the presentation of the material on part time basis along with regular work.

Providing for the Expression of the Pupils
with Reference to the Appreciation Material.

The Meter Reader's Visit.

- a. Have them draw a diagram of their own Electric Meter.
- b. Read their meters for one month and bring their readings to class showing the dials.
- c. Construction of a large chart showing the dials of the electric meter and with a movable pointer on each dial.
- d. Each pupil move the pointers on the dials to show how his electric meter dials appear at the first of the month.
- e. Each pupil read his meter at the end of the month and move the pointers on the chart to show the later meter reading.
- f. The pupils will make an Order Form to show their own entrance on to the lines of the Edison Electric Company.
- g. Then they will find out from their meter reader what their house area is and under what rate it comes.

The Meter Reader's Book at the Calculating Division.

- a. The pupils may be given the readings as shown on the meter page enclosed on page 11, or make up a meter page for their readings. They will find the approximate amount of electricity used each month and thus build up a meter page showing the amount of electricity used for several months.
- b. Each pupil will go to the chart and move the pointer on the dials to record the readings for each month.

The Billing Department.

- a. The class, or a few representative pupils, may visit the Burroughs Public Utility Billing Machine Co., 136 Federal Street, Boston.
 1. Have machine demonstrated.
 2. Have them make out with the help of the operator, four or five bills from their own meter page.
 3. The other pupils may make theirs out in pencil or typewrite them.

The Addressograph Division.

- a. A visit will be made to the Addressograph Co.,
26 High St., Boston.
 1. Have the Graphotype Machine demonstrated and have their own names, and addresses embossed on the plates.
 2. Also have the Addressograph Machine demonstrated and have their own names and addresses printed on the bills.
 3. It may be possible to have these companies send out machines for class demonstrations.

The Return of the Bill to the Calculating Division.

- a. Have the pupils check over each others bills after they are made out, to see if they are correct.

The Statistical Division.

- a. A visit may be made to the International Business Machine Co., 27 Huntington Ave., Boston. The following points to be observed:
 1. How the tabulating card is punched.
 2. How the cards are sorted.
 3. How the cards when going through the tabulator give certain information we wish.

The Bill at the Bookkeeping Division.

- a. A discussion of the four parts of the bill and the function of each.
- b. Each pupil observe the bill when it arrives at his home from the company.
- c. Two file drawers or boxes may be used to demonstrate how the customer's accounts are handled. The class will represent one block of accounts and after the remittance coupons have been received they may go through the regular office procedure and take a cycle-balance at the end of the month.

The Payment of the Bill.

- a. The pupils will observe and write out a description of what happened when they paid their family bill at the pay station or at the Boston office of the Company.

Bibliography*

Bassett, W.R., Accounting as an Aid to Business Profits.

Blanchard, M. Roland, Accountancy--Its Functions in and
Pertinance to Business.

Briggs, The Junior High School.

Earhart, Types of Teaching.

Geysbeek, John B., Ancient Double-Entry Bookkeeping.

Hines, The Junior High School Curricula.

Hayward, F. H., The Lesson of Appreciation.

Koos, Junior High School.

Miller, J.W., Methods in Commercial Teaching.

Newlove and Pratt, Specialized Accounting.

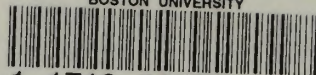
Third Report; N.E.A. by Prof. G.M. Wilson

Van Denburn, J.K., The Junior High School Idea.

Wilson, Tull & Kyte, Methods of Teaching.

* This bibliography may on first sight appear somewhat brief, but it will be remembered that this is a comparatively new field. Most of this thesis is the result of personal investigation by the writer.

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